SUPERMICRO®

SUPERSERVER 6014L-M4

USER'S MANUAL

Revision 1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 6014L-M4. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 6014L-M4 is a high-end dual processor rackmount server based on the SC813MS-300C 1U rackmount server chassis and the Super X6DLP-4G2 serverboard. The X6DLP-4G2 supports Intel® Xeon® LV or ULV processors in 479-pin PGA sockets.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the Super X6DLP-4G2 serverboard and the SC813MS-300C chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 6014L-M4 into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 6014L-M4.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X6DLP-4G2 serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC813MS-300C 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SCSI or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

Appendix B: BIOS POST Checkpoint Codes

Appendix C: Software Installation

Appendix D: System Specifications

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Chapter 1

Introduction

1-1 Overview

The SuperServer 6014L-M4 is a high-end dual processor, 1U rackmount server featuring state-of-the-art technology. The 6014L-M4 is comprised of two main subsystems: the SC813MS-300C 1U rackmount chassis and the X6DLP-4G2 serverboard. Please refer to our web site for information on operating systems that have been certified for use with the 6014L-M4 (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components may have been included with the 6014L-M4, as listed below.

- Two (2) CPU heatsinks (SNK-P0019)
- One (1) slim DVD drive [DVM-PNSC-824(B)]
- SCSI Accessories:
  Four (4) SCSI hard drive carriers (CSE-PT-39(B))
  One (1) SCSI backplane (CSE-SATA-813S)
  One (1) SCSI cables (CBL-0043)
- One (1) 3.3V 64-bit, 66 MHz PCI-X slot riser card (CSE-RR1U-X)
- Three (3) cooling fans (FAN-0061)
- Rackmount hardware with screws (CSE-PT52):
  Two (2) rack rail assemblies
  Six (6) brackets for mounting the rack rails in a rack/telco rack
- One (1) CD containing drivers and utilities
- SuperServer 6014L-M4 User's Manual

Note: "B" indicates part is also available in black.

1-2 Serverboard Features

At the heart of the SuperServer lies the X6DLP-4G2, a dual processor serverboard based on Intel's E7520 chipset and designed to provide maximum performance. Below are the main features of the X6DLP-4G2.

Processors

The X6DLP-4G2 supports single or dual Intel® Xeon® LV or ULV processors in 479-pin PGA sockets. Please refer to our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X6DLP-4G2 has eight (8) 240-pin DIMM sockets that can support up to 16 GB of registered ECC DDR2-400 SDRAM. The memory bus is a dual-channel configuration and memory modules must be installed in pairs (two at a time). All memory modules used to populate the system should be the same size, type and speed.

SCSI Subsystem

The onboard Adaptec AIC-7902 SCSI controller supports four 80-pin SCA Ultra320 SCSI hard drives. (SCA = Single Connection Attachment.) The SCSI drives are connected to an SCA backplane that provides power, bus termination and configuration settings. The SCSI drives are hot-swap units.

PCI Expansion Slots

The X6DLP-4G2 has two 64-bit, 66 MHz (3.3V) PCI-X slots, two x8 PCI-Express slots and one 32-bit, 33 MHz (5V) PCI slot. When configured as the X6DLP-4G2, the 64-bit, 133 MHz PCI-X slot is available with the use of a riser card (included with the system). (Alternatively, the optional CSE-RR1U-EL riser card may be used to support an add-on card in the x8 PCI-Express slot.)

Ethernet Ports

The X6DLP-4G2 has one Intel 82573V and one Intel 82573L single port Ethernet controllers to support two Gigabit LAN ports. (Supports 100/1000 BASE-T, RJ45 output.)

Onboard Controllers/Ports

An onboard IDE controller supports up to four UltraDMA/100 hard drives or ATAPI devices. Onboard I/O backpanel ports include one COM port, a VGA port, two USB ports, PS/2 mouse and keyboard ports and two GLAN (NIC) ports.

Other Features

Other onboard features that promote system health include voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

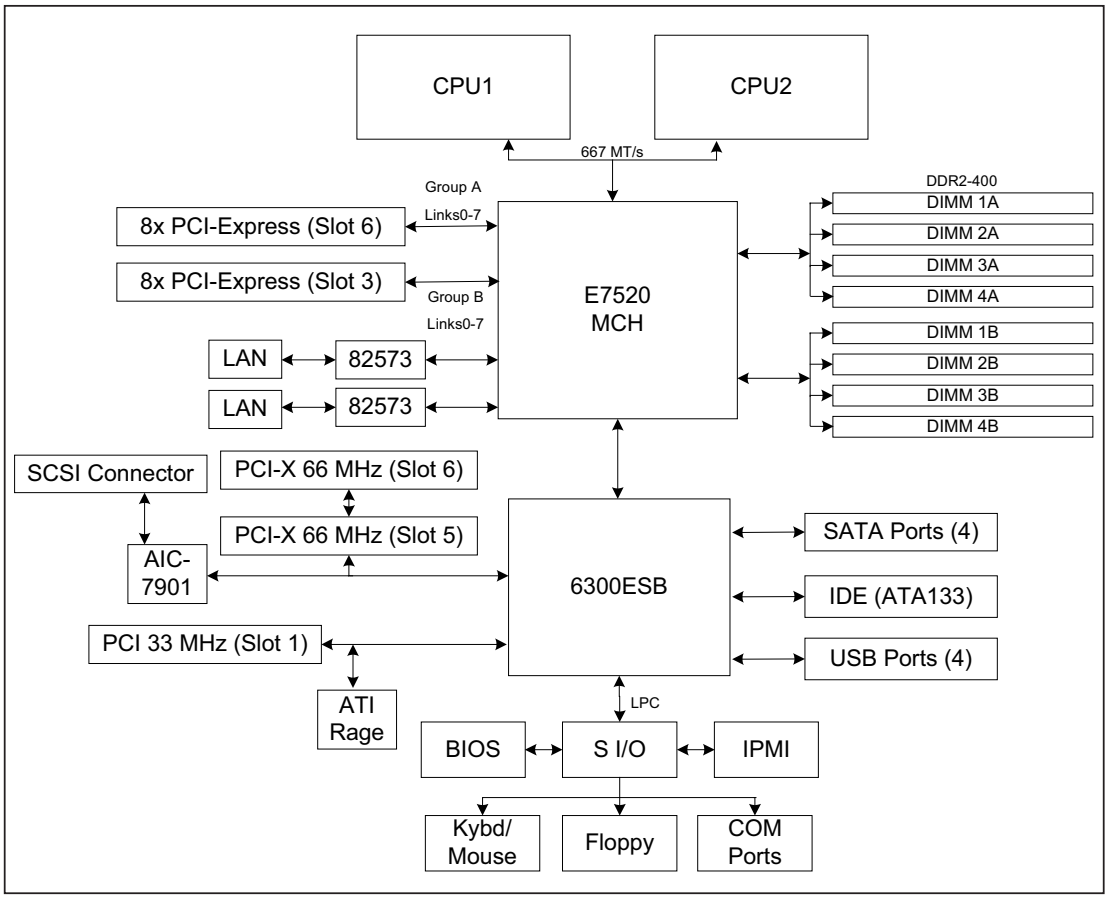


Figure 1-1. Intel E7520 Chipset: System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC813MS-300C chassis.

System Power

When configured as a SuperServer 6014L-M4, the SC813MS-300C chassis includes a single 300W power supply.

SCSI Subsystem

The SC813MS-300C chassis was designed to support four SCSI hard drives. These drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drives.

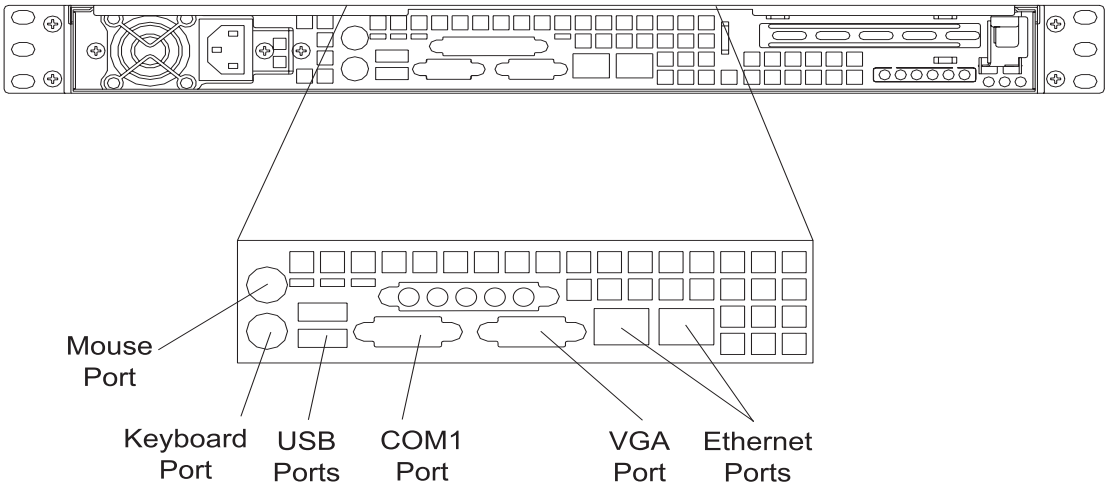
Control Panel

The SC813MS-300C's control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity and system overheat conditions. The control panel also includes a main power button and a system reset button.

Rear I/O Panel

The SC813MS-300C is a 1U rackmount chassis. Its I/O panel provides one PCI expansion slot, one COM port (another is internal), two USB ports, PS/2 mouse and keyboard ports, a VGA port and two Gb Ethernet ports. (See Figure 1-2.)

Figure 1-2. Rear I/O Panel



Cooling System

The SC813MS-300C chassis has an innovative cooling design that features three 4-cm high-performance system cooling fans. Each of these fans plug into a chassis fan header on the serverboard. An air shroud channels the airflow generated by the fans to efficiently cool the processor area of the system.

A fan speed control setting in BIOS allows fan speed to be determined by system temperature [the recommended setting is 3-pin (Server)].

1-4 Contacting Supermicro

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Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 6014L-M4 up and running. Following the steps in the order given should enable you to have the system operational within a minimal amount of time. This quick setup assumes that your 6014L-M4 system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processor(s), system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer 6014L-M4 was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 6014L-M4. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 6014L-M4 was shipped in should include two sets of rail assemblies, six rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimal amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In a single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and hot plug SCSI drives to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4 Installing the System into a Rack

This section provides information on installing the SuperServer 6014L-M4 into a rack unit with the rack rails provided. If the server has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails

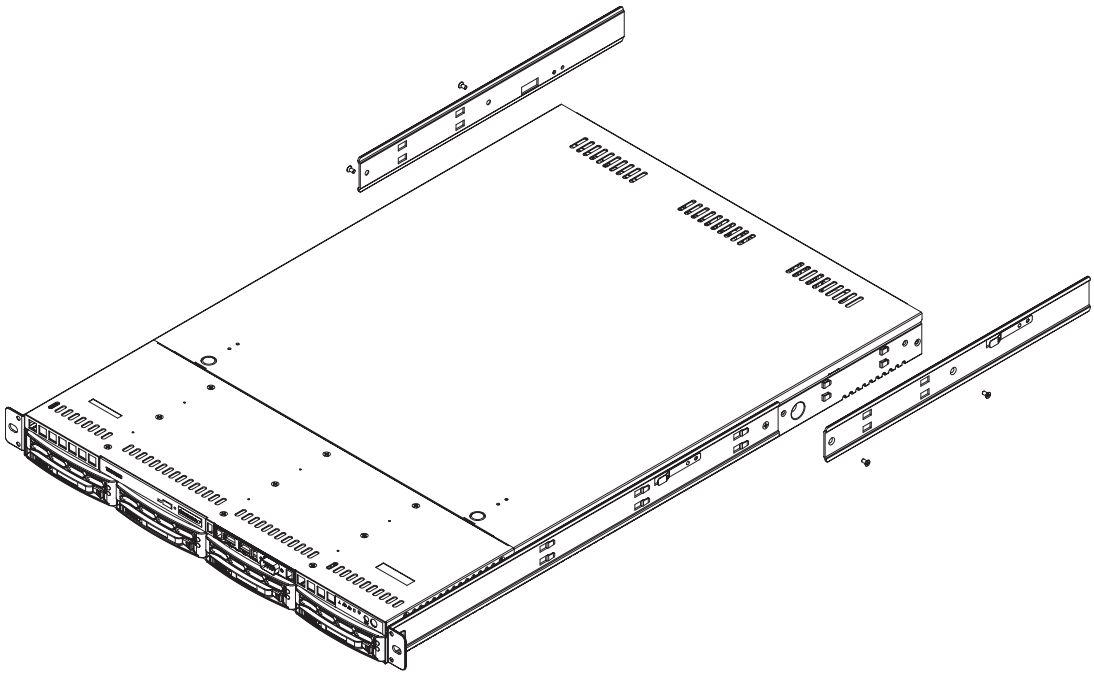
You may have received rack rail hardware with the SuperServer 6014L-M4. (Two front inner rails should already be attached to the chassis.) This hardware consists of two rear inner rails that secure to the chassis, one on each side just behind the preinstalled front inner rails. Note that these two rails are left/right specific.

Installing the Rear Inner Rails

First, locate the right rear inner rail (the rail that will be used on the right side of the chassis when you face the front of the chassis). Align the two square holes on the rail against the hooks on the right side of the chassis. Securely attach the rail to the chassis with M4 flat head screws. Repeat these steps to install the left rear inner rail to the left side of the chassis (see Figure 2-1). You will also need to attach the rail brackets when installing into a telco rack.

Locking Tabs: Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-1. Installing Rear Inner Chassis Rails



Installing the Rack Rails

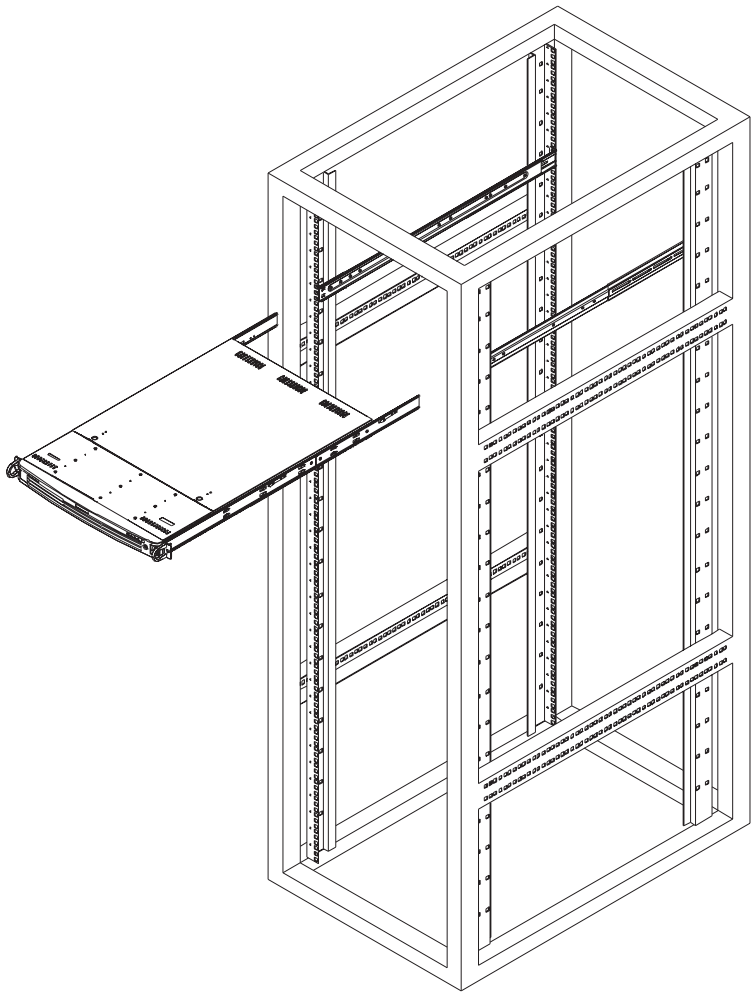
Determine where you want to place the SuperServer 6014L-M4 in the rack (see Rack and Server Precautions in Section 2-3). Position the chassis rail guides at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-2.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

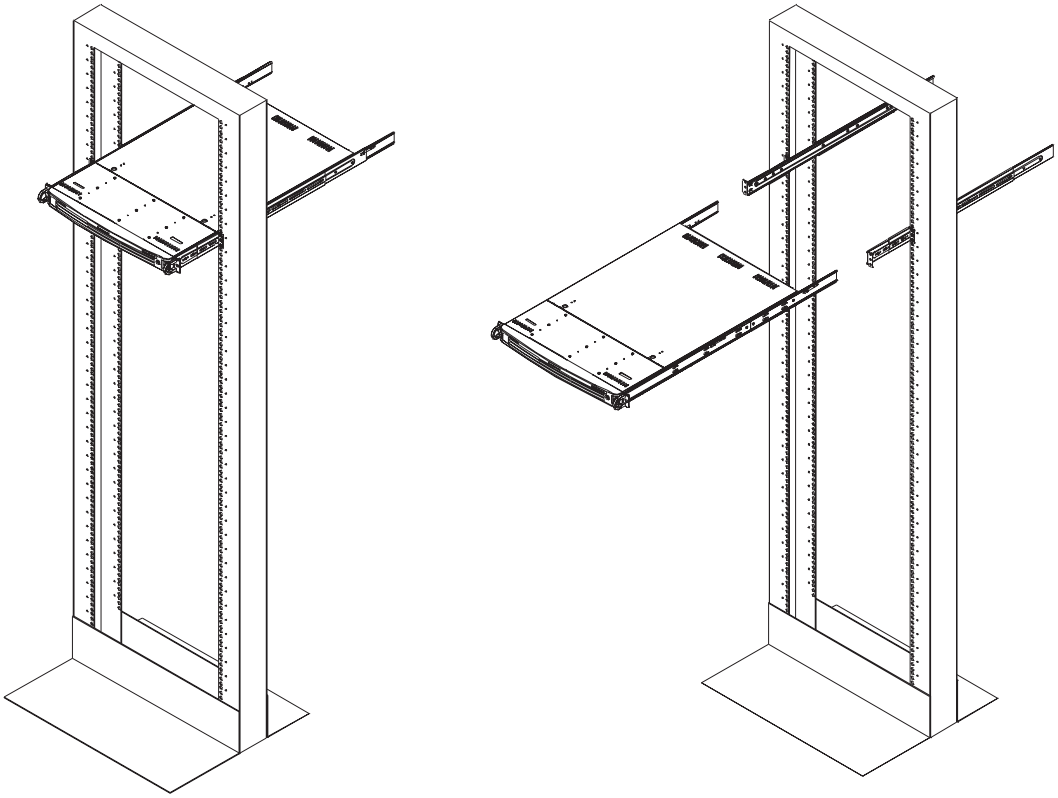
Figure 2-2. Installing the Server into a Rack (with optional front bezel shown)



Installing the Server into a Telco Rack

If you are installing the SuperServer 6014L-M4 into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accommodate the width of the telco rack.

Figure 2-3. Installing the Server into a Telco Rack (with optional front bezel shown)



2-5 Checking the Motherboard Setup

After you install the 6014L-M4 in the rack, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

1. Accessing the inside of the system (Figure 2-4)

First, grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover. There is a large rectangular recess in the middle front of the top cover to help you push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. Check the CPUs (processors)

You may have one or two processors already installed into the system board. Each processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.

3. Check the system memory

Your 6014L-M4 server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

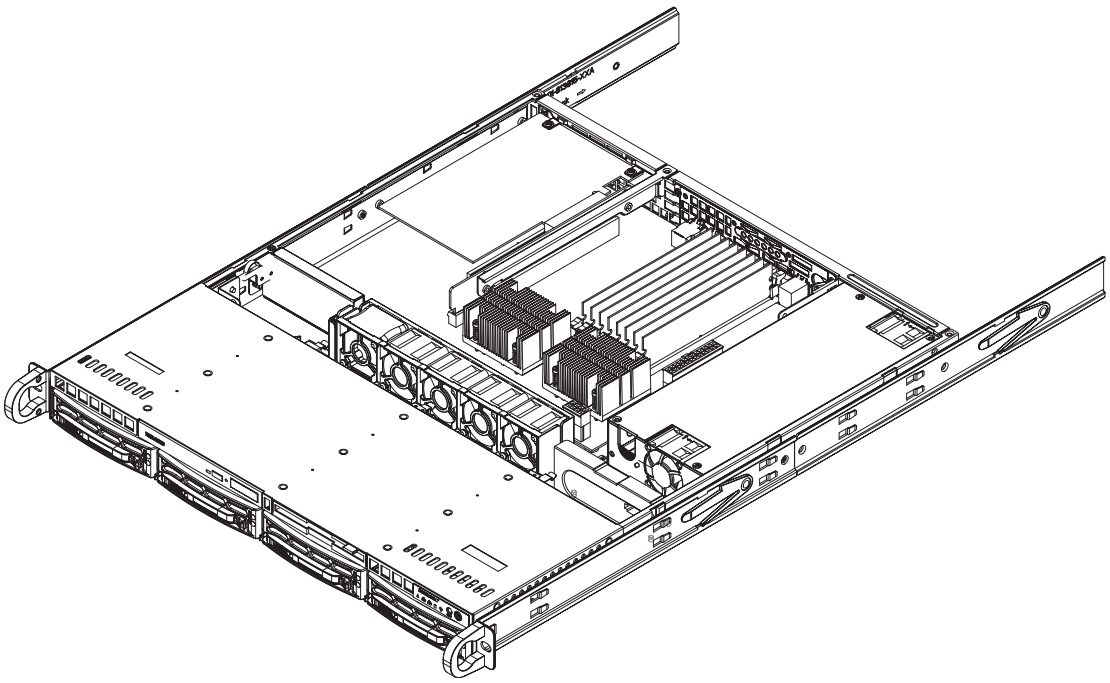
4. Installing add-on cards

If desired, you can install an add-on card to the system. See Chapter 5 for details on installing a PCI add-on card.

5. Check all cable connections and airflow

Make sure all power and data cables are properly connected and not blocking the airflow. See Chapter 5 for details on cable connections. Also, check the air seals for damage. The air seals are located under the chassis fans and beneath the frame cross section that separates the drive bay area from the motherboard area of the chassis.

Figure 2-4.
Accessing the Inside of the SuperServer 6014L-M4



2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SCSI drives and SCSI backplane have been properly installed and all essential connections have been made.

1. Accessing the drive bays

All drives can be accessed from the front of the server. For servicing the CD-ROM drive, you will need to remove the top chassis cover. The SCSI disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

2. Installing a CD-ROM drive

Refer to Chapter 6 if you need to reinstall a CD-ROM drive to the system.

3. Check the SCSI disk drives

Depending upon your system's configuration, your system may have one or more SCSI drives already installed. If you need to install SCSI drives, please refer to the appropriate section in Chapter 6.

4. Check the airflow

Airflow is provided by three high-performance 4-cm input fans. The system component layout was carefully designed to promote sufficient airflow through the small 1U rackmount space. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

5. Supplying power to the system

The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS). Finish by pressing the power button on the front of the chassis.

Chapter 3

System Interface

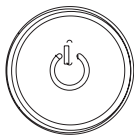
3-1 Overview

There are several LEDs on the control panel as well as others on the SCSI drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Control Panel Buttons

There are two push-button buttons located on the front of the chassis: a reset button and a power on/off button.

- **RESET:** The reset switch reboots the system.



- **POWER:** This is the main power switch, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Control Panel LEDs

The control panel located on the front of the chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **Overheat/Fan Fail:** When this LED flashes, it indicates a fan failure. When on continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.

- **NIC2:** Indicates network activity on JLAN2 when flashing .

- **NIC1:** Indicates network activity on JLAN1 when flashing.

- **HDD:** Channel activity for all HDDs. This light indicates CD-ROM and SCSI drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 SCSI Drive Carrier LEDs

Each SCSI drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SCSI drive carrier indicates drive activity. A connection to the SCSI SCA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The SAF-TE compliant backplane activates the red LED to indicate a drive failure. If one of the SCSI drives fail, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed SCSI drives.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 6014L-M4 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperServer 6014L-M4 clean and free of clutter.

- The SuperServer 6014L-M4 weighs approximately 35 lbs. (15.9 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

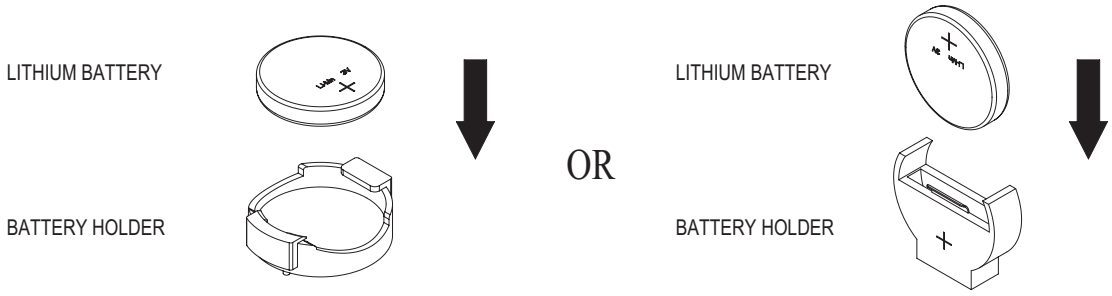
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 6014L-M4 is operating to assure proper cooling. Out of warranty damage to the 6014L-M4 system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install processors, memory and heatsinks to the X6DLP-4G2 serverboard, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the serverboard to protect and cool the system.

5-1 Handling the Serverboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the serverboard can cause it to bend if handled improperly, which may result in damage. To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

5-2 Serverboard Installation

This section explains how to mount the X6DLP-4G2 into the SC813MS-300C chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To access the inside of the server, remove the screws from the back lip of the top cover of the chassis, then pull the cover off.

Note: Before you install the serverboard you should first attach the heatsink brackets to the back of the serverboard.

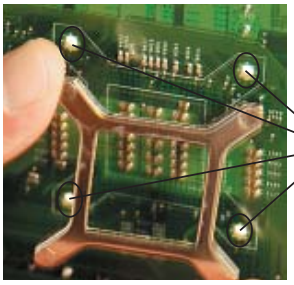
Installing the Heatsink Brackets

1. Remove the protective film from the heatsink bracket.

Remove the protective film

2. Locate the heatsink bracket mounting holes on the reverse side of the serverboard.

3. Align the four pins of the heatsink bracket with the four bracket mounting holes on the back of the serverboard.



Heatsink bracket mounting holes

4. Insert the pins of the bracket into the corresponding mounting holes. Gently press the bracket onto the serverboard until it is fully inserted into the holes.

Installing the Serverboard

Carefully mount the serverboard to the chassis by aligning the board holes with the raised metal standoffs that are visible on the serverboard tray. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug (do not screw them in too tightly). Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system.

5-3 Processor and Heatsink Installation

Avoid placing direct pressure to the top of the processor package. Also, never place the serverboard on a conductive surface. Always remove the power cord first before adding, removing or changing any hardware components.

The X6DLP-4G2 has two 479-pin PGA sockets that support Intel® Xeon® LV or ULV processors.

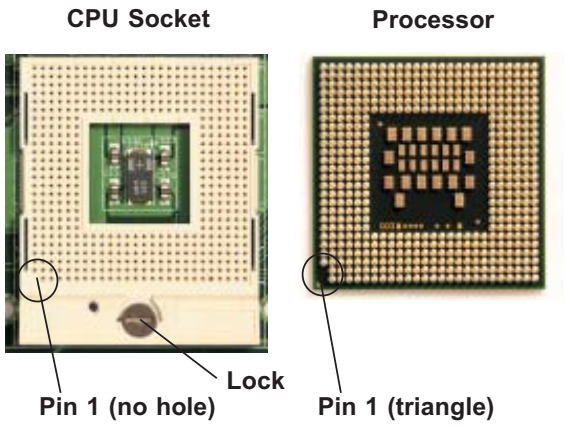
Important: Make sure that you have installed the heatsink bracket(s) to the back of the serverboard first.

Tools needed: a flat head screwdriver, a Phillips screwdriver and thermal grease.

Installing the Processors

1. Locate the pin 1 locations on the CPU socket and the processor as shown in the pictures.

2. The CPU socket should come in the unlocked position. To unlock the CPU socket, use a flat head screwdriver to turn the lock mechanism counter-clockwise until it cannot turn further.



3. Align pin 1 of the processor with the pin 1 corner of the CPU socket.

4. Once aligned, lower the processor straight-down and into the socket.

Align pin 1 of processor with pin 1 of the CPU socket.

Warning: Do not brush the processor pins against the surface of the socket or install it at an angle, which may bend or damage the pins.

5. Once the processor is properly seated in the socket, turn the lock mechanism clockwise with the flat-head screw driver to lock it.

Repeat the above steps if you wish to install a secind processor.

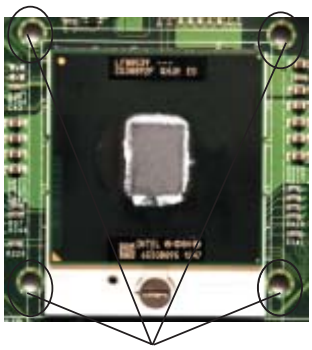
Installing the Heatsinks

1. Do not apply any thermal grease to the heatsink or the CPU die; the if the required amount has already been applied

.

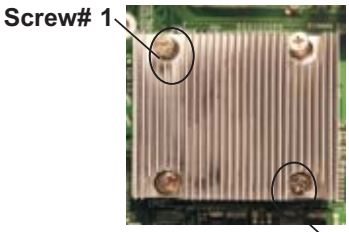
2. Locate the four heatsink mounting holes on the serverboard.

Installed processor



Heatsink mounting holes

3. Place the heatsink on top of the processor and insert the heatsink's four pegs into the heatsink mounting holes.



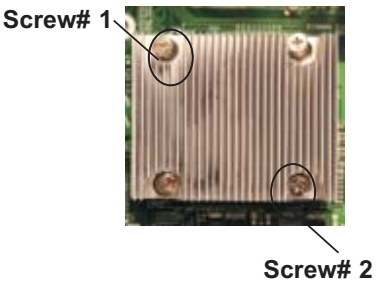
4. Using a Phillips screwdriver, screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug (do not fully tighten the screws, which may damage the processor.) Repeat the same step to install the remaining two screws.

Installed heatsink

5. Repeat the steps above to install another heatsink to the secind processor (if installed).

Removing the Heatsink

1. Using a Phillips screwdriver to remove the heatsink screws from the serverboard (remove diagonal screws first, as show in the picture on the right).



2. Hold the heatsink and gently wriggle the heatsink to loosen it from the processor. (Do not use excessive force when wriggling the heatsink!!)

3. Once the heatsink has been loosened, remove the heatsink from the processor.

4. Clean the surface of the processor and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease before you re-install the processor and the heatsink.

5-4 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables. The following data cables (with their serverboard connector locations noted) should be connected. See the serverboard layout figure in this chapter for connector locations.

- SCSI (J28)
- CD-ROM cable (IDE2)
- Floppy drive cable (J24)
- Control panel cable (JF1, see next page)

Connecting Power Cables

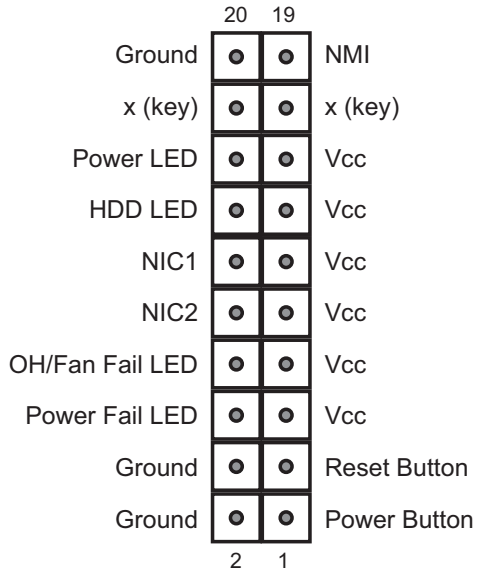
The X6DLP-4G2 has a 24-pin primary ATX power supply connector designated "PW1" for connection to the ATX power supply. Connect the appropriate connector from the power supply to the PW1 connector to supply power to the serverboard. The power connector at PW2 must also be connected to your power supply. See the Connector Definitions section in this chapter for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Note that even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single ribbon cable to simplify their connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis. See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

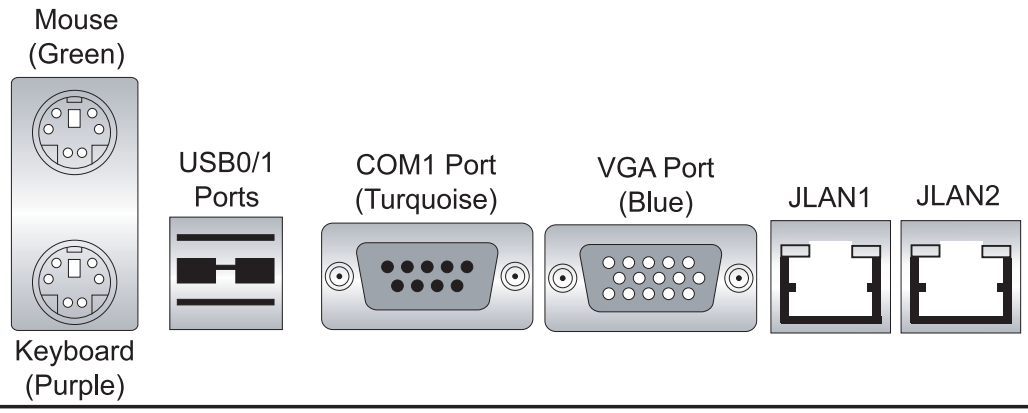
Figure 5-1. JF1 Header Pins



5-5 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports



5-6 Installing Memory

Note: Check the Supermicro web site for recommended memory modules: http://www.supermicro.com/support/resources/

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

DIMM Installation (See Figure 5-3)

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM1A and DIMM1B. Pay attention to the notch along the bottom of the module to prevent inserting the module incorrectly. (See support information below.)
2. Gently press down on the memory module until it snaps into place. Repeat to install all DIMMs.

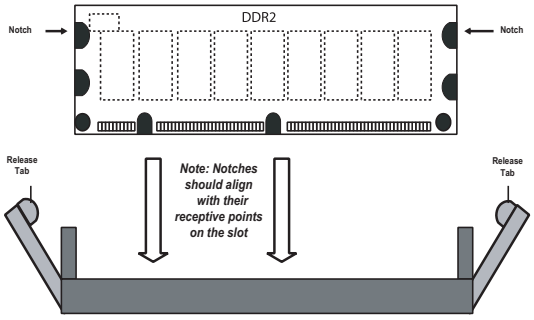
Memory Support

The X6DLP-4G2 supports up to 16 GB of registered ECC DDR2-400 type SDRAM. The memory scheme is interleaved so you must install two modules at a time.

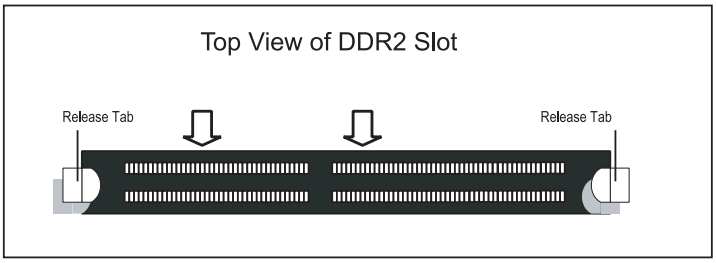
Note: Due to OS limitations, some operating systems may not support more than 4GB of memory.)

Figure 5-3a. Installing DIMMs

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.



To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.



5-7 Adding PCI Cards

1. PCI slots

The 6014L-M4 system includes a CSE-RR1U-X riser card. This riser fits into a 66 MHz PCI slot to support a full-height, half-length PCI add-on card.

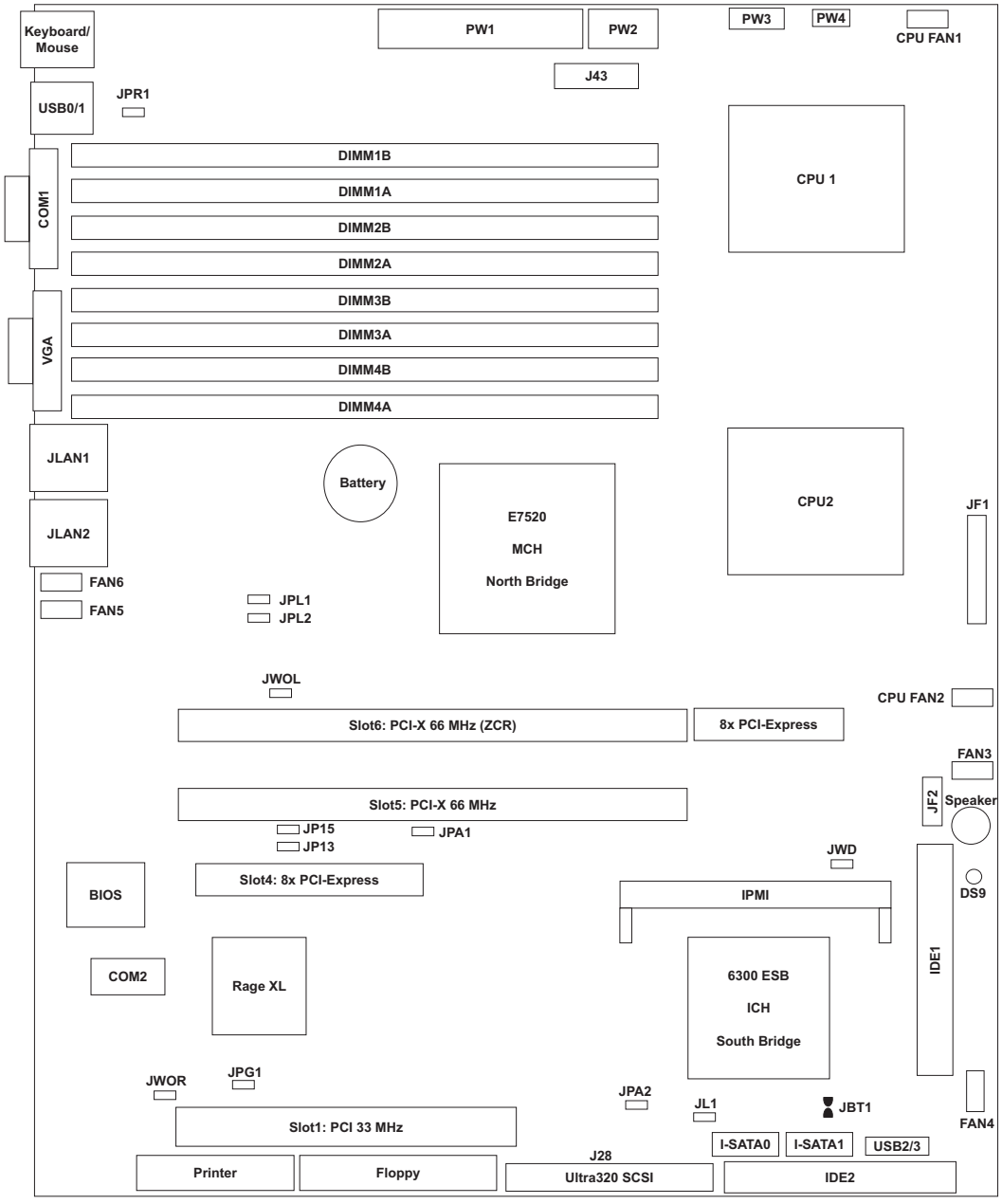
Alternatively, there is the option of using the CSE-RR1U-EL riser card (optional, not included) to support the use of an expansion card in the x8 PCI-Express slot.

2. PCI card installation

Before installing a PCI add-on card, see step 1, above. Begin by swinging out the release tab on the appropriate PCI slot shield. Insert the PCI card into the riser card, pushing down with your thumbs evenly on both sides of the card. Finish by pushing the release tab back to its original (locked) position.

5-8 Serverboard Details

Figure 5-4. SUPER X6DLP-4G2 Layout
(not drawn to scale)



Notes:

Jumpers not indicated are for test purposes only.

X6DLP-4G2 Quick Reference

Jumper	Description	Default Setting
J13/J15	PCI/PCI-X Slots to System SMB	Open (Disabled)
JBT1	CMOS Clear	See Section 5-9
JPA1	SCSI Controller Enable	Pins 1-2 (Enabled)
JPA2	SCSI Channel Termination	Open (Enabled)
JPF	Power Force On	Open (Disabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1/JPL2	JLAN1/JLAN 2 Enable/Disable	Pins 1-2 (Enabled)
JPR1	Power Fail Alarm Reset	Open (Disabled)
JWD	Watch Dog Enable	Pins 1-2 (Enabled)

Connector	Description
COM1/COM2	COM1/COM2 Serial Port Connector/Header
FAN 1-6	CPU/Chassis Fan Headers
Floppy	Floppy Disk Drive Connector
IDE1/IDE2	IDE1/2 Hard Disk Drive Connectors
IPMI	IPMI 2.0 Socket
I-SATA0/1	Serial ATA0, Serial ATA1 Connectors
J28	Ultra320 SCSI Connector
JF1	Front Control Panel Connector
JF2	PWR LED (Pins1-3), Speaker (Pins 5-7)
JL1	Chassis Intrusion Header
JLAN 1/2	G-bit Ethernet Ports
JWOL	Wake-on-LAN Header
JWOR	Wake-on-Ring Header
Keyboard/Mouse	Keyboard and Mouse Ports
Printer	Parallel (Printer Port) Header
PW1	Primary 24-pin ATX PWR Connector
PW2	12V 8-pin PWR Connector
PW3	Power SMB (System Management Bus)
PW4	PWR Fault
USB0/1	Universal Serial Bus Ports
USB2/3	Universal Serial Bus Headers
VGA	VGA Connector

Onboard Indicators	Description
DS1, DS5	Power LED Indicators
DS7-DS8	POST Code LEDs (*See Section 5- & App.A)
DS9	System Status LED

5-9 Connector Definitions

ATX Power Connector

The main power supply connector on the X6DPL-4G2 meets the SSI EPS 12V specification. See the table on the right for pin definitions.

Note: You must also connect the processor power connector (PW2, below.)

ATX Power 24-pin Connector Pin Definitions (PW1)

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Processor Power Connector

In addition to the Primary ATX power connector (above), the 12V processor power connector at PW2 must also be connected to your power supply to provide adequate power to the system.

Secondary Power Connector Pin Definitions (PW2)

Pins	Definition
1 through 4	Ground
5 through 8	+12V

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)

Pin#	Definition
19	Control
20	Ground

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)

Pin#	Definition
15	Vcc
16	Control

HDD LED

The HDD LED (for IDE and SCSI drives) connection is located on pins 13 and 14 of JF1. Attach the drive LED cable to these pins to display disk activity. See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)

Pin#	Definition
13	Vcc
14	HD Active

NIC1/2 LEDs

The NIC (Network Interface Controller) LED connections for JLAN1 are located on pins 11 and 12 of JF1 and the NIC LED connections for JLAN2 are located on pins 9 and 10 of JF1. Attach the NIC cables to display network activity. Refer to the table on the right for pin definitions.

NIC1/2 LED Pin Definitions (JF1)

Pin#	Definition
9/11	Vcc
10/12	Ground

Overheat/Fan Fail LED

Connect an LED to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide warning of system overheating or system fan failure. The LED will flash/stay on as long as the fan fail/overheat condition exists. Refer to the table on the right for pin definitions and Chapter 3 for details.

OH/Fan Fail LED Pin Definitions (JF1)

Pin#	Definition
7	Vcc
8	Ground

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

Power Fail LED Pin Definitions (JF1)

Pin#	Definition
5	Vcc
6	Ground

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see setting in BIOS). To turn off power in suspend mode, depress the button for at least 4 seconds.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	PW_ON
2	Ground

JLAN1/2 (Ethernet Ports)

Two gigabit Ethernet ports are located beside the VGA port. These ports accept RJ45 type cables.

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

Universal Serial Bus (USB0/1)

Two USB 2.0 ports are located beside the LAN ports. USB0 is the bottom port and USB1 is the top port. See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions (USB0/1)

USB0		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	Key

Universal Serial Bus Headers

Two extra USB headers designated USB2/3 can be used for front side USB access. You will need a USB cable to use these connections. Refer to the table on the right for pin definitions.

USB Headers Pin Definitions (USB2/3)

USB2		USB3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	N/A

Fan Headers

There are six fan headers (Fan1 - Fan 6) on the X6DLP-4G2. Fan1 and Fan 2 are for the CPU fans and Fan3 to Fan6 are system cooling fans. See the table on the right for pin definitions.

Note: These fan headers are 4-pin fans. Pins 1-3 are backward compatible with traditional 3-pin fans. Please refer to "Health Monitoring" in the BIOS Advanced Settings for fan speed control settings.

Fan Header Pin Definitions (Fan1-5)

Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM_Control

Speaker/Power LED/Keylock

On the JF2 header, pins 1, 3, 5 and 7 are for the speaker, pins 2, 4 and 6 are for the power LED and pins 8 and 10 are for the keylock. Pin 9 is absent (key). See the table on the right for speaker pin definitions.

Note: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 5-7 with a jumper.

Speaker Connection Pin Definitions	
1	Red Wire, Speaker Data
3	No Connection
5	Key
7	Speaker Data

PWR LED/Keylock Connection Pin Definitions	
2	+Vcc
4	-Vcc
6	-Vcc
8	Keylock
10	Keylock

Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and "wake-up" by an incoming call to the modem when in suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR)	
Pin#	Definition
1	Ground (Black)
2	Wake-up

Wake-On-LAN

The Wake-On-LAN (JWOL) header is designated JWOR. See the table on the right for pin definitions. You must enable the LAN Wake-Up function in the BIOS and also have a LAN card with a Wake-on-LAN connector and cable to use this feature.

Wake-On-LAN Pin Definitions (JWOL)	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Power Fault

Connect a cable from your power supply to the PW4 header to provide warning of power supply failure. This warning signal is passed through the PWR_LED pin to indicate of a power failure on the chassis. See the table on the right for pin definitions.

PWR Fault Connection Pin Definitions (PW4)

Pin#	Definition
1	PWR 1 Fail Signal
2	PWR 2 Fail Signal
3	PWR 3 Fail Signal
4	PWR 4 Fail Signal

Note: This feature is only available when using redundant Supermicro power supplies.

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and PS/2 mouse ports are located beside the USB ports. See the table at right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

SMB Power (I^2C) Connector

The I^2C connector (PW3) allows you to monitor the status of the power supply, fans and system temperature.

SMB Power Connection Pin Definitions (PW3)

Pin#	Definition
1	Clock
2	Data
3	N/A
4	N/A
5	N/A

Serial Ports

One backpanel COM port and one COM header (located near the BIOS chip) are included on the serverboard. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

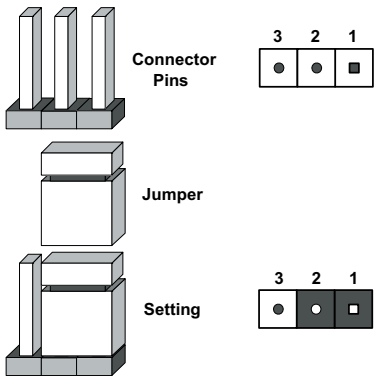
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: Pin 10 is included on the header but not on the port. NC indicates no connection.

5-10 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the serverboard layout pages for jumper locations.



Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS,
1) First power down the system and unplug the power cord(s)
2) With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver
3) Remove the screwdriver (or shorting device)
4) Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS*.

JLAN1/2 Enable/Disable

Change the setting of jumper JPL1 and JPL2 to enable or disable the JLAN1 and JLAN2 ports, respectively . See the table on the right for jumper settings. The default setting is enabled

JLAN Enable/Disable Jumper Settings (JPL1, JPL2)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

VGA Enable/Disable

JPG1 enables or disables the VGA port on the serverboard. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SMBus to PCI Slots

Jumpers J13 and J15 allow you to connect the PCI-X/PCI slots to the System Management Bus. The default setting is open to disable the connection. See the table on the right for jumper settings.

SMBus to PCI Jumper Settings (J13, J15)	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

Power Force On

Jumper JPF allows you to enable or disable the Power Force-On function. If enabled, power will always stay on automatically. If disabled (the default setting), the user must press the power button to power on the system.

Power Force-On Jumper Settings (JPF)	
Jumper Setting	Definition
Open	Disabled
Closed	Force Pwr On

Watch Dog

JWD controls Watch Dog, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will cause WD to reset the system if an application is hung up. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that is hung up. See the table on the right for jumper settings. Watch Dog can also be enabled via BIOS.

Note: When enabled, the user needs to write their own application software to disable the Watch Dog Timer.

Watch Dog Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Alarm Reset

The system will notify you in the event of a power supply failure. This feature assumes that Supermicro redundant power supply units are installed in the chassis. If you only have a single power supply installed, you should not connect anything to this header (JPR1) to prevent false alarms. See the table on the right for jumper settings.

Alarm Reset Jumper Settings

Jumper Setting	Definition
Open	Enabled
Closed	Disabled

SCSI Enable/Disable

The JPA1 jumper allows you to enable or disable the onboard SCSI controller. The normal (default) position is on pins 1-2 to enable SCSI. See the table on the right for jumper settings.

SCSI Enable/Disable Jumper Settings (JPA1)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SCSI Termination Enable/ Disable

Jumper JPA2 is used to enable or disable termination for the SCSI connector. The default setting is open to enable termination. See the table on the right for jumper settings.

Note: In order for the SCSI drives to function properly, please do not change the default setting (enabled) set by the manufacturer.)

SCSI Term. Enable/Disable Jumper Settings (JPA2)

Jumper Setting	Definition
Open	Enabled
Closed	Disabled

5-10 Onboard Indicators

JLAN LEDs

The Gigabit Ethernet LAN ports (located beside the USB ports) each have two LEDs. The right LED indicates activity while the left LED may be green, amber or off to indicate the speed of the connection. See table at right for the functions associated with the connection speed LED.

JLAN Left LED (Connection Speed Indicator)	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

System Status LED

DS9 is an onboard indicator that informs you of the system power status. Refer to table on the right for information. Please refer to Appendix A for more information.

System Status LED Indicator (DS9)	
DS9	Definition
Green	System: On, Normal
Amber	System: Off, PWR Cable Connected
Red	PWR or CPU Failure, CPU Overheat

Onboard LED Indicators (DS1, DS5)

DS1 and DS5 are additional LED indicators on the X6DLP-4G2. See the table on the right for information regarding these two LEDs.

LED Indicators (DS1, DS5)	
DS#	Definition (when illuminated)
DS1	CPU PWR bad or processor power cable not connected
DS5	Power present on serverboard

Onboard LED Indicators (DS7, DS8)

DS7 and DS8 are POST code LEDs. Please refer to Appendix A for POST code information.

5-11 Parallel Port, Floppy, IDE, SATA and SCSI Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Parallel (Printer) Port Header

The parallel (printer) port is located beside the floppy drive connection. See the table on the right for pin definitions.

Parallel (Printer) Port Connector Pin Definitions (Printer)

Pin#	Definition	Pin #	Definition
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	Write Data
23	PE	24	Write Gate
25	SLCT	26	NC

Floppy Connector

The floppy connector is designated "Floppy". See the table to the right for pin definitions.

Floppy Drive Connector Pin Definitions (Floppy)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

SATA Connectors

There are no jumpers to configure the onboard SATA connectors. See the table on the right for pin definitions.

SATA Connector Pin Definitions (I-SATA0, I-SATA1)

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

IDE Connectors

There are no jumpers to configure the onboard IDE connectors. See the table below for pin definitions.

IDE Drive Connectors
Pin Definitions (IDE1, IDE2)

Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

SCSI Connector

Refer to the table at right for pin definitions for the Ultra320 SCSI connector located at J28.

Ultra320 SCSI Drive Connector Pin Definitions (J28)

Pin#	Definition	Pin #	Definition
1	+DB (12)	35	-DB (12)
2	+DB (13)	36	-DB (13)
3	+DB (14)	37	-DB (14)
4	+DB (15)	38	-DB (15)
5	+DB (P1)	39	-DB (P1)
6	+DB (0)	40	-DB (0)
7	+DB (1)	41	-DB (1)
8	+DB (2)	42	-DB (2)
9	+DB (3)	43	-DB (3)
10	+DB (4)	44	-DB (4)
11	+DB (5)	45	-DB (5)
12	+DB (6)	46	-DB (6)
13	+DB (7)	47	-DB (7)
14	+DB (P)	48	-DB (P)
15	Ground	49	Ground
16	DIFFSENS	50	Ground
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	Reserved	53	Reserved
20	Ground	54	Ground
21	+ATN	55	-ATN
22	Ground	56	Ground
23	+BSY	57	-BSY
24	+ACK	58	-ACK
25	+RST	59	-RST
26	+MSG	60	-MSG
27	+SEL	61	-SEL
28	+C/D	62	-C/D
29	+REQ	63	-REQ
30	+I/O	64	-I/O
31	+DB (8)	65	-DB (8)
32	+DB (9)	66	-DB (9)
33	+DB (10)	67	-DB (10)
34	+DB (11)	68	-DB (11)

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC813MS-300C chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required

The only tool you will need to install components and perform maintainance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD discharge.

Precautions

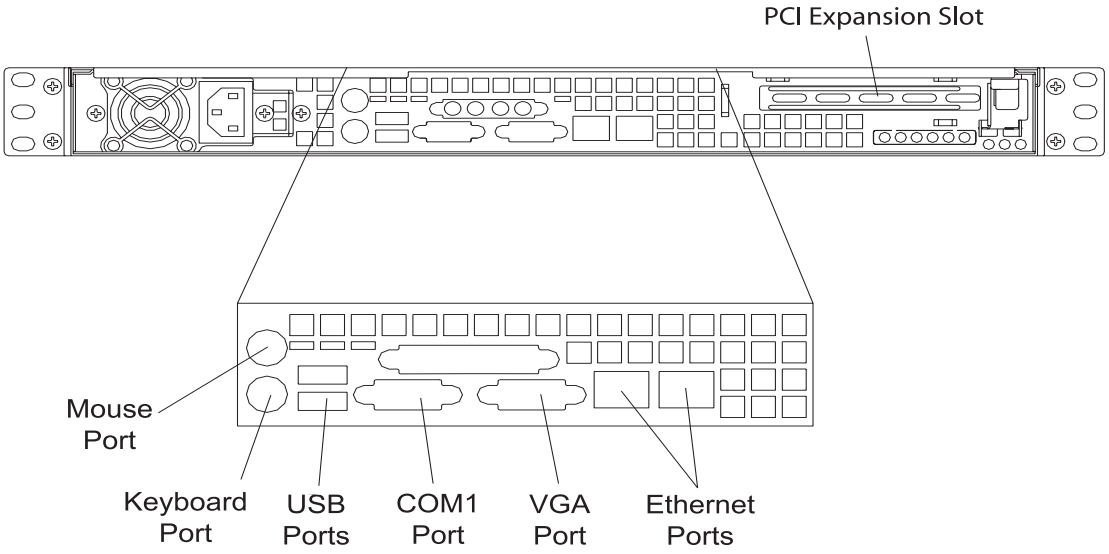
- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Front View

Figure 6-2. Chassis Rear View



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system control buttons and status indicators. These wires have been bundled together in a ribbon cable to simplify the connection. Connect the cable from JF1 on the serverboard to JP4 on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both JF1 and JP4. Pull all excess cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 System Fans

Three 4-cm high-performance fans provide the cooling for the SuperServer 6014L-M4. The chassis includes air seals under the fans and at the chassis cross section, which separates the drive bay area from the serverboard area of the chassis to promote better airflow. It is highly important that the air seal is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis.

The fans can adjust their speed according to the heat level sensed in the system, which results in more efficient and quieter fan operation. Fan speed is controlled by a setting in BIOS (see page 7-13).

System Fan Failure

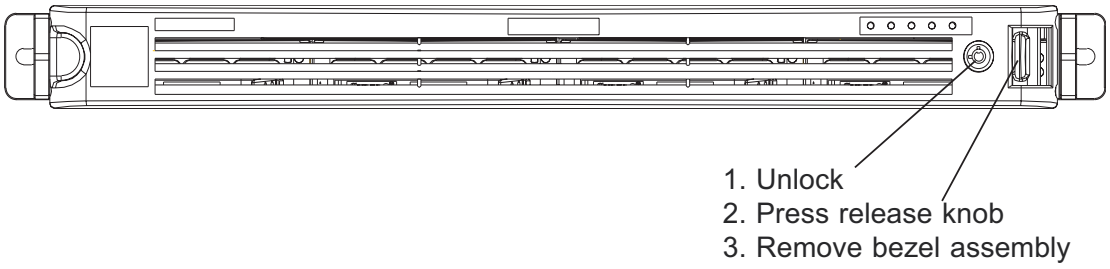
If a fan fails, you will need to have it replaced with the same type. Contact your vendor or Supermicro for information on replacement fans.

6-4 Drive Bay Installation/Removal

Removing the Front Bezel

If your system has a front bezel (optional) attached to the chassis, you must first remove it to gain access to the drive bays. To remove the bezel, first unlock the front of the chassis then press the release knob (see Figure 6-3). Carefully remove the bezel with both hands. A filter located within the bezel can be removed for replacement/cleaning. It is recommended that you keep a maintenance log of filter cleaning/replacement, since its condition will affect the airflow throughout the whole system.

Figure 6-3. Removing the Front Bezel



Accessing the Drive Bays

SCSI Drives: Because of their hotswap capability, you do not need to access the inside of the chassis or power down the system to install or replace SCSI drives. Proceed to the next step for instructions.

CD-ROM Drive: For installing/removing a CD-ROM drive, you will need to gain access to the inside of the 5014C-M8 by removing the top cover of the chassis. Proceed to the "CD-ROM Drive Installation" section later in this chapter for instructions.

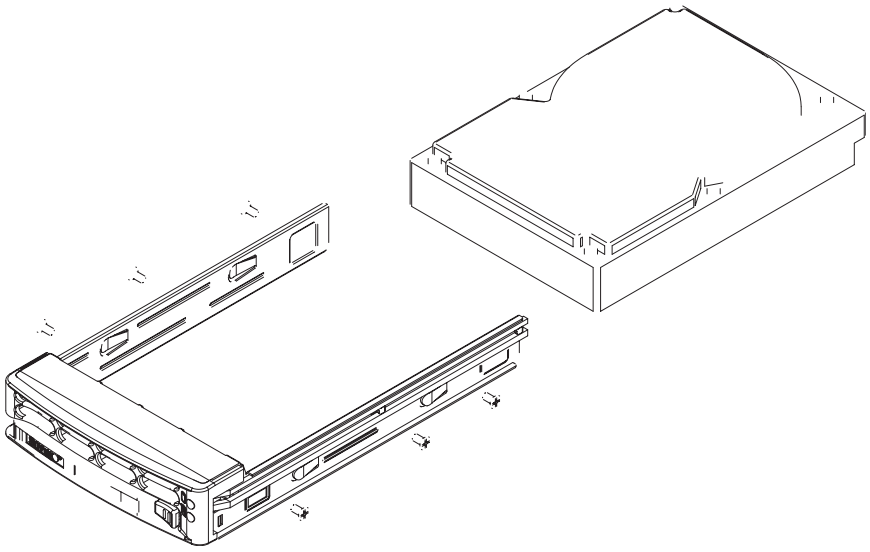
Note: Only a "slim" CD-ROM drive will fit into the 6014L-M4.

SCSI Drive Installation

1. Mounting a SCSI drive in a drive carrier

The SCSI drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the SCSI drive bays. For this reason, even empty carriers without SCSI drives installed must remain in the chassis. To add a new SCSI drive, install a drive into the carrier with the printed circuit board side toward the carrier so that the mounting holes align with those in the carrier. Secure the drive to the carrier with screws, as shown in Figure 6-4.

Figure 6-4. Mounting a Drive in a Carrier



2. Installing/removing hot-swap SCSI drives

Four SCSI drive bays are located in the front of the chassis, making them easily accessible for installation and removal. These SCSI drives are hot-swap units, meaning they can be installed and removed without powering down the system. To remove, first push the release button located beside the drive LEDs, then swing the handle fully out and use it to pull the unit straight out.

Use caution when working around the SCSI backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

Important: Regardless of how many SCSI drives are installed, all four drive carriers must remain in the drive bays to maintain proper airflow.

SCA Backplane

The SCSI drives plug into an SCA backplane that provides power, SCSI ID and bus termination. A RAID controller can be used with the SCA backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drives. The SCA SCSI backplane is already preconfigured, so there are no jumpers or switches present on it.

CD/DVD-ROM Drive Installation

The top cover of the chassis must be opened to gain full access to the DVD/CD-ROM drive bay. The 6014L-M4 accomodates only slim DVD/CD-ROM drives. Side mounting brackets are needed to mount a slim DVD/CD-ROM drive in the 6014L-M4 server.

You must power down the system before installing or removing a DVD/CD-ROM drive. First, release the retention screws that secure the server unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

With the chassis cover removed, unplug the power and data cables from the drive. Then locate the locking tab at the rear of the drive. It will be on the left side of the drive when viewed from the front of the chassis. Pull the tab away from the drive and push the drive unit out the front of the chassis. Add a new drive by following this procedure in reverse order. You may hear a faint *click* of the locking tab when the drive is fully inserted. Remember to reconnect the data and power cables to the drive before replacing the chassis cover and restoring power to the system.

6-5 Power Supply

The SuperServer 6014L-M4 has a single 300 watt power supply. This power supply has the capability of operating at 100 - 240 input volts. Depress the main power button on the front of the chassis and then unplug the AC power cord to completely remove power from the system before removing the power supply.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro (PWS-0054 - see contact infomation in Chapter 1).

Replacing the Power Supply

1. Accessing the inside of the system

To replace a power supply, you must first remove the top chassis cover. To do so, first release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and push it away from you. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. Removing the power supply

First unplug the power cord from the system. To remove the failed power unit, remove the two screws on the back of the power supply, which secure it to the chassis. You can then lift the unit straight out of the chassis. (The power cord should have already been removed.)

3. Installing a new power supply

Replace the failed unit with another unit of the same wattage. It is highly recommended to replace it with the exact same power supply. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit. Before reconnecting the power cord, make sure the power switch on the power supply is in the off position. Then reconnect the power cord, replace the chassis top cover and push the unit back into the rack. Finish by turning the power switch on the power supply on, and then depress the power button on the front of the system.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMIBIOS Setup Utility for the X6DLP-4G2. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily upgraded using a floppy disk-based program. This chapter describes the basic navigation of the AMIBIOS Setup Utility setup screens.

Starting the BIOS Setup Utility

To enter the AMIBIOS Setup Utility screens, hit the <Delete> key while the system is booting up.

Each main BIOS menu option is described in this user's guide. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured while options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: AMI BIOS has default text messages built-in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMIBIOS Setup Utility uses a key-based navigation system (hot keys). Most of these hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, and Esc. Options printed in **Bold** are the default settings.

How To Change the Configuration Data

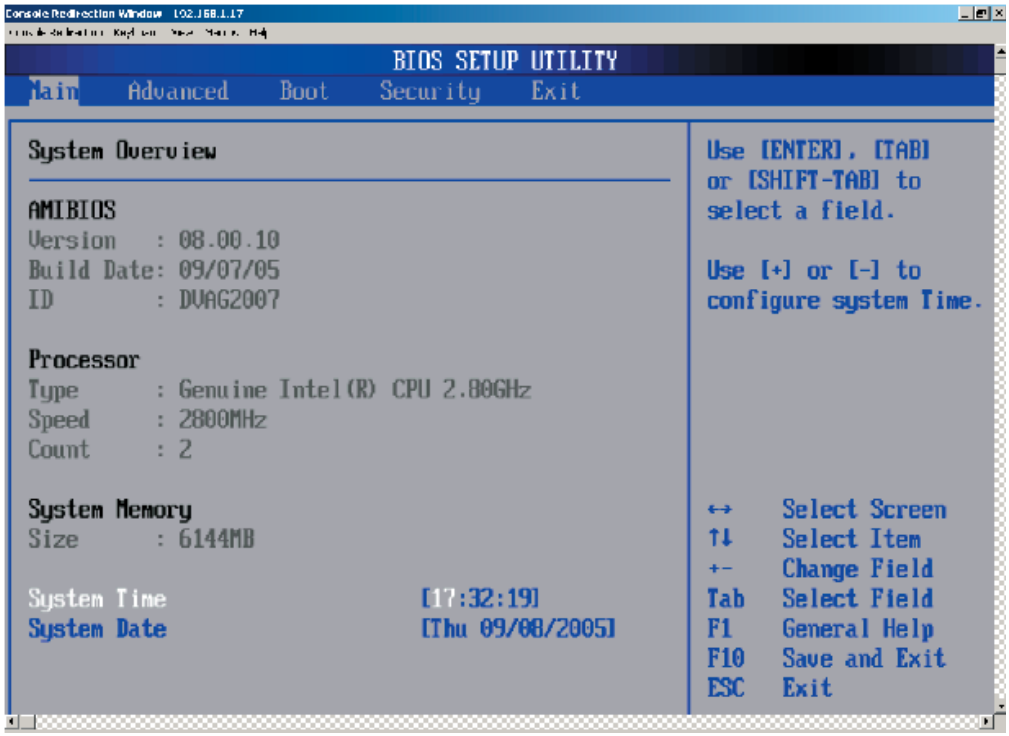
The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMIBIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

Warning!! To prevent a possible boot failure, do not shut down or reset the system while updating BIOS..

7-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the ***Main*** tab on the top of the screen. The Main BIOS Setup screen is shown below.



When you select the Main Setup, the following items will be automatically displayed:

System Overview: The following BIOS information will be displayed:

AMIBIOS

Version

Build Date

ID

Processors

When you select this option, the AMI BIOS will automatically display the status of processors as shown below:

Type

Speed

Counts

System Memory

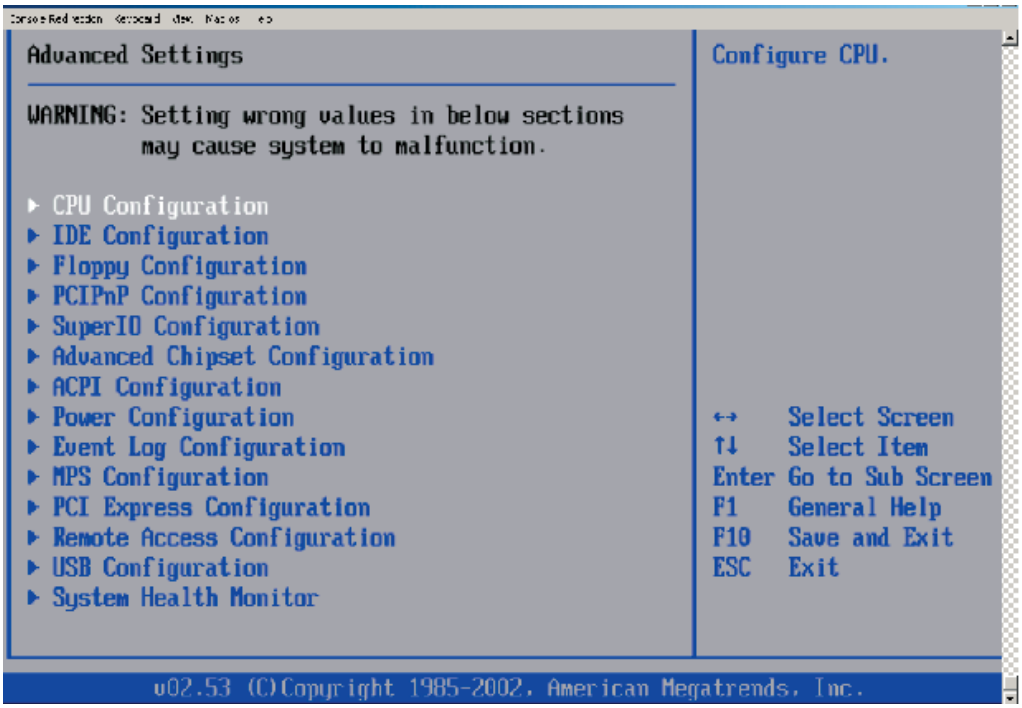
This option allows the AMI BIOS to display the status of memory installed in the system.

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in DAY/MM/DD/YY format. The time is entered in HH:MM:SS format.(***Note:*** The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30P. M. as 17:30:00.)

7-3 Advanced Settings

The Advanced Settings screen and sub menus are listed below:



Warning

When you first enter the Advanced Setup screen, the Setup Warning will be displayed. Please follow the instruction and set the correct value for each item to prevent the system from malfunctioning.

▶CPU Configuration Sub-Menu

Configure Advanced CPU Settings

This option allows the user to configure the Advanced CPU settings for the processor(s) installed in the system.

Execute Disable Bit (Available when supported by the OS and the CPU.)

Set to **Enabled** to enable the Execute Disable Bit to allow the processor to classify areas in the system memory where an application code can and cannot execute, thus preventing a worm or a virus from creating a flood of codes to overwhelm the processor or damage the system during an attack. (For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.

Core Multi-Processing (Available when supported by the CPU.)

Select **Enabled** to enable the function of multiple CPU core processing. if Disabled, one CPU execution core will be disabled.

CPU TM Function (Available when supported by the CPU.)

This feature allows the user to activate the CPU thermal monitor mechanism. TM1 allows the CPU to regulate its power consumption based upon the modulation of the CPU Internal clock when the CPU temperature reaches a pre-defined overheat threshold. The options are Disabled and **Enabled**. (Select Enabled to allow the CPU to reduce its power consumption by lowering the CPU frequency and the CPU voltage when the CPU temperature reaches a pre-defined overheat threshold.) TM2 is available only when it is supported by the CPU.

▶IDE Configuration Sub-Menu

IDE Configuration

This feature allows the user to configure the IDE mode. The options are Disabled, P-ATA (Parallel ATA) only, S-ATA (Serial ATA) only and **P-ATA & S-ATA**.

Combined Mode Operation

This feature allows the user to select the IDE Combined Mode. The options are **P-ATA 1st Channel** and S-ATA 1st Channel.

S-ATA Ports Definition

This feature allows the user to configure the Serial ATA Ports. The options are **P0-Master/P1-Slave** and P0-Slave/P1-Master.

Primary IDE Channel Master/Slave, Secondary IDE Channel Master/Slave, Third IDE Master/Slave, Fourth IDE Channel Master/Slave

These settings allow the user to set the parameters of Primary IDE Channel Master/Slave, Secondary IDE Channel Master/Slave, Third IDE Master/Slave, Fourth IDE Channel Master/Slave slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly.

Type

Select the type of device connected to the system. The options are Not Installed, **Auto**, CDROM and ARMD.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select "Disabled" to allow the data to be transferred from and to the device one sector at a time. Select "Auto" to allows the data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined. Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MBs. Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MBs. Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MBs. Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MBs. Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer rate of 16.6 MBs. This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select "Auto" to allow the AMI BIOS to auto detect hard disk drive support. Select "Disabled" to prevent the AMI BIOS from using the S.M.A.R.T. Select "Enabled" to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

32Bit Data Transfer

Select "Enabled" to activate the 32-bit data transfer function. Select "Disabled" to disable this function. The options are Enabled and **Disabled**.

Hard Disk Write Protect

Select Enabled to enable the function of Hard Disk Write Protect to prevent data from being written to HDD. The options are Enabled or **Disabled**.

IDE Detect Time Out

This feature allows the user to set the time-out value for detecting ATA and ATAPI devices installed in the system. The options are 0 (sec), 5, Mode 1.0, 15, 20, 25, 30, and **35**.

ATA(PI) 80Pin Cable Detection

This feature allows the AMI BIOS to auto-detect 80-pin ATA(PI) cables. The options are **Host & Device**, Host and Device.

▶Floppy Configuration

This option allows the user to configure the settings for the floppy drives installed in the system.

Floppy A

Move the cursor to these fields via up and down arrow keys to select the floppy type. The options are Disabled, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3½", **1.44 MB 3½"**, and 2.88 MB 3½".

OnBoard Floppy Controller

Select "Enabled" to enable the onboard floppy controller. The options are Disabled and **Enabled**.

▶PCI/PnP Configuration

Plug & Play OS

Select Yes to allow the OS to configure Plug & Play devices. (This is not required for system boot if you system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

PCI Latency Timer

This option sets the latency of all PCI devices on the PCI bus. The default setting is "64." Select **"32"** to set the PCI latency to 32 PCI clock cycles. Select "64" to set the PCI latency to 64 PCI clock cycles. Select "96" to set the PCI latency to

96 PCI clock cycles. Select "128" to set the PCI latency to 128 PCI clock cycles. Select "160" to set the PCI latency to 160 PCI clock cycles. Select "192" to set the PCI latency to 192 PCI clock cycles. Select "224" to set the PCI latency to 224 PCI clock cycles. Select "248" to set the PCI latency to 248 PCI clock cycles.

Allocate IRQ to PCI VGA

Set this value to allow or restrict the system from giving the VGA adapter card an interrupt address. The options are **Yes** and No.

Palette Snooping

Select Enabled to inform the PCI devices that an ISA graphics device is installed in the system in order for the graphics card to function properly. The options are Enabled and **Disabled**.

PCI IDE BusMaster

Set this value to allow or prevent the use of PCI IDE busmastering. Select "Enabled" to allow the BIOS to use the PCI busmaster for reading and writing to IDE drives. The options are **Disabled** and Enabled.

Offboard PCI/ISA IDE Card

This option allows the user to assign a PCI slot number to an off-board PCI/ISA IDE card in order for it to function properly. The options are **Auto**, PCI Slot1, PCI Slot2, PCI Slot3, PCI Slot4, PCI Slot5, and PCI Slot6.

IRQ3/IRQ4/IRQ5/IRQ7/IRQ9/IRQ10/IRQ11/IRQ14/IRQ15

This feature specifies the availability of an IRQ to be used by a PCI, PnP device. Select Reserved for an IRQ to be used by a Legacy ISA device. The options are **Available** and Reserved.

DMA Channel 0/Channel 1/Channel 3/Channel 5/Channel 6/Channel 7

Select Available to indicate that a specific DMA channel is available to be used by a PCI/PnP device. Select Reserved if a DMA channel specified is reserved for a Legacy ISA device.

Reserved Memory Size

This feature specifies the size of memory block to be reserved for Legacy ISA devices. The options are **Disabled**, 16K, 32K, 64K.

▶Super IO Configuration Sub-Menu

Serial Port1 Address

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to *Disabled*, the serial port physically becomes unavailable. Select "3F8/IRQ4" to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options are Disabled, **3F8/IRQ4**, 3E8/IRQ4, 2E8/IRQ3.

Serial Port2 Address

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 2. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to "Disabled", the serial port physically becomes unavailable. Select "2F8/IRQ3" to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address. The options are Disabled, **2F8/IRQ3**, 3E8/IRQ4 and 2E8/IRQ3.

Parallel Port Address

This option specifies the I/O address used by the parallel port. Select Disabled to prevent the parallel port from accessing any system resources. When the value of this option is set to Disabled, the printer port becomes unavailable. Select **378** to allow the parallel port to use 378 as its I/O port address. The majority of parallel ports on computer systems use IRQ7 and I/O Port 378H as the standard setting. Select 278 to allow the parallel port to use 278 as its I/O port address. Select 3BC to allow the parallel port to use 3BC as its I/O port address.

Parallel Port Mode

This feature allows the user to specify the parallel port mode. The options are Normal, Bi-Directional, EPP and **ECP**.

ECP Mode DMA Channel

This feature allows the BIOS to select the ECP DMA mode for the parallel port. The options are DMA0, DMA1 and **DMA3**.

Parallel Port IRQ

This feature allows the user to select the IRQ (interrupt request) for the parallel port. The options are IRQ5 and **IRQ7**.

▶Advanced Chipset Settings

This item allows the user to configure the Advanced Chipset settings for the system.

▶NorthBridge Configuration

This feature allows the user to configure the settings for the Intel E7520 NorthBridge chipset.

Memory Remap Feature

Select Enabled to allow remapping of the overlapped PCI memory above the total physical memory. The options are **Enabled** and Disabled.

Memory Mirroring/Sparing

This feature allows the user to enable the function of Memory Mirroring and Sparing if memory configuration supports this function. The options are **Disabled** and Sparing.

DMA Controller

This feature allows the user to enable or disable DMA Controller. The options are **Disabled** and Enabled.

▶SouthBridge Configuration

This feature allows the user to configure the settings for the Intel ICH SouthBridge chipset.

CPU B.I.S.T. Enable

Select Enabled to enable the function of CPU Built In Self Test. The options are Enabled and **Disabled**.

ICH Delayed Transaction

Select Disabled to set the South Bridge P2P Bridge Secondary Discard Timer to 32 micro-seconds for the PCI 32-bit bus. Select **Enabled** to set the South Bridge P2P Bridge Secondary Discard Timer to 4 micro-seconds for the PCI 32-bit bus.

ICH DCB

Select **Enabled** to activate the ICH DMA Collection Buffer to provide Type-F DMA performance for all DMA channels, allowing the DMA controllers located in the FPGA to move data between the CPU memory and the coprocessor. It is ideal for systems whose CPU main memory can be directly accessed from the FPGA.

▶APCI Configuration

This item allows the user to enable or disable the ACPI support for the operating system.

ACPI Configuration

Use this feature to configure additional ACPI options. Select Yes if the operating system supports ACPI. Select No if the operating system does not support ACPI. The options are No and **Yes**.

ACPI 2.0 Features

Select Yes to allow the RSDP pointers to point to the Fixed System Description Tables. Select No to deactivate this function. The options are Yes and **No**.

ACPI APIC Support

Select Enabled to allow the ACPI APIC Table Pointer to be included in the RSDP pointer list. The options are **Enable** and Disabled.

AMI OEMB Table

Select Enabled to allow the OEMB Table Pointer to be included in the R(x)SDT pointer lists. The options are **Enabled** and Disabled.

Headless Mode

Select Enabled to activate the Headless Operation Mode through the ACPI and will allow the BIOS to boot up the system without any keyboard, mouse and video. The options are Enabled and **Disabled**.

▶Power Configuration

This feature allows the user to configure PnP settings.

Power Button

If set to Instant-Off, the system will power off immediately as soon as the user hits the power button. If set to 4-sec., the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant-Off** and 4-sec override.

Restore on AC Power Loss

This setting allows the user to decide how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On and **Last State**.

Watch Dog Timer

This setting is used to activate and de-activate the Watch Dog Timer. It must be used in conjunction with the WD jumper (see Chapter 2 for details). The options are **Disabled** and Enabled.

▶Event Log Configuration

Highlight this item and press <Enter> to view the contents of the event log.

View Event Log

This feature allows the user to view all unread events.

Mark All Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear Event Log

This setting will clear all event logs when set to OK. The options are OK and **Cancel**.

ECC Event Logging

This setting allows you to enable or disable the function of ECC Event logging. The options are Enabled or **Disabled**.

Hub Interface Event Logging

This setting allows you to enable or disable the function of Hub Interface Event logging. The options are Enabled or **Disabled**.

System Bus Event Logging

This setting allows you to enable or disable the function of System Bus Error Event logging. The options are Enabled or **Disabled**.

Memory Buffer Event Logging

This setting allows you to enable or disable the function of Memory Buffer Event logging. The options are Enabled or **Disabled**.

PCI/PCI Error Logging

This setting allows you to enable or disable the function of PCI Error logging. The options are Enabled or **Disabled**.

PCI/PCI Express Error Logging

This setting allows you to enable or disable the function of PCI Express Error logging. The options are Enabled or **Disabled**.

▶MPS Configuration

This section allows the user to configure the multiprocessors table.

MPS Revision

This feature allows the user to select the MPS revision. Please follow the instructions given on the screen to select the MPS revision number. The options are 1.1 and **1.4.**

▶PCI Express Configuration

This section allows the user to configure the PCI Express slots.

Active State Power Management

Select Enabled to activate the function of power management for signal transactions between the PCI Express L0 and L1 Links. The options are Enabled and **Disabled**.

I/O Expander Mode

This feature allows the user to set the IO Expand Mode for Hot Plug support. The options are **PCA9555**, Two PCA9554, One PCA9554 (Low), One PCA9554 (High), Two PCA9554A, One PCA9554A (Low), and Two PCA9554.

PCI Express PortA (Slot4)/PCI Express PortB (Slot6)/PCI Express PortC0 (NIC1)/PCI Express PortC1 (NIC2)

This feature allows the user to configure the PCI Express slot specified. If set to Auto, the slots with IO cards installed will be visible. If Enabled, the IO slots will always be displayed. If set to Disabled, the IO slots will not displayed. The options are Auto, **Enabled**, and Disabled.

PCI Express Compliance Mode

Select Enabled to enable MCH to activate the PCI Express Compliance Mode. The options are **Disabled** and Enabled.

Spread Spectrum

Select Enabled to enable the function of Spread Spectrum and allows the BIOS to monitor the level of electromagnetic interference caused by the components installed in the system and to attempt to reduce the electromagnetic interference when needed. The options are **Disabled** and Enabled.

▶Remote Access Configuration

You can use this screen to select options for the Remote Access Configuration. Use the up and down arrow keys to select an item. Use the <+> and <-> keys to change the value of the selected option.

Remote Access

This feature allows the user to disable the function of Remote Access. If Disabled is not selected, then you can select a Remote Access type. The options are Enabled and **Disabled**.

Remote Access

This feature allows the user to enable the Remote Access function. The Options are Enabled and **Disabled**.

If the item "Remote Access" is set to Enabled, you can select a Remote Access type and configure the following settings:

Serial Port Number

This feature allows the user to select the serial port for Console Redirection. The options are **COM1** and COM2.

Serial Port Mode

This feature allows the user to set the serial port mode for Console Redirection. The options are **115200 8, N, 1**, 57600 8, N, 1, 38400 8, N, 1, 19200 8, N, 1 and 9600 8, N, 1.

Flow Control

This feature allows the user to set the flow control for Console Redirection. The options are **None,** Hardware and Software.

Redirection After BIOS POST

This feature allows the user to select Disabled to turn off Console Redirection after POST. Select **Always** to keep Console Redirection active all the time. (This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader.

Terminal Type

This feature allows the user to select the target terminal type for Console Redirection.The options are **ANSI**, VT100 and VT-UTF8.

VT-UTF8 Comb Key Support

This feature allows the user to select Enabled to enable the VT-UTF8 Combination Key support for the ANSI/VT100 Terminals. The options are **Enabled** and Disabled.

Sredir Memory Display Delay

This feature allows the user to decide how many seconds the BIOS shall wait before memory information is displayed. The Default setting is **No Delay**.

▶USB Configuration

USB Function

This feature allows you to enable the USB Ports. The options are Disabled and **Enabled.**

Legacy USB Support

Select Enabled to enable USB Legacy support. Disable legacy support if there are no USB devices installed in the system. The options are Disabled, **Enabled**, and Auto.

USB 2.0 Controller

This setting allows you to enable or disable the USB 2.0 Controller. The options are Disabled and **Enabled**.

USB 2.0 Controller Mode

This setting allows you to configure the USB 2.0 Controller Mode. The options are **Hi-Speed (480 Mbps)** and Full Speed-(12Mbps).

▶USB Mass Storage Device Configurations

USB Mass Storage Reset Delay

This setting allows you to decide how long the system should wait in an attempt to detect the presence of a USB Mass Storage Device before it issues a start command the system to proceed with the next operation during POST. The options are 10 Seconds, **20 Seconds**, 30 Seconds and 40 Seconds.

Emulation Type

If set to **Auto**, USB devices that are smaller than 530MB will be emulated as floppy and the remaining will be emulated as an HDD. The Forced FDD option will allow you to configure an HDD formatted drive to boot as an FDD (eg. Zip Drive). The options are Auto, Floppy, Forced FDD, Hard Disk, and CD ROM.

▶System Health Monitor

This feature allows the AMI BIOS to automatically display the status of the following items:

CPU Overheat Temperature

This feature allows the user to set the CPU Overheat temperature threshold. The options range from 65°C to 90°C. Use the <+> and <-> keys to set the desired setting. The default setting is **78°C**.

AMI BIOS will automatically monitor and display the following information:

CPU1 Temperature, CPU2 Temperature, System Temperature, CPU1 VCORE/ CPU2 VCORE (*for 2U systems), 3.3V Vcc(V), +5 Vin, 12V Vcc(V), -12V Vcc (V), DRAM VTT, 1.2V Vcc, DIMM Voltage, 1.5V Voltage, 5V Standby, 3.3V Standby.

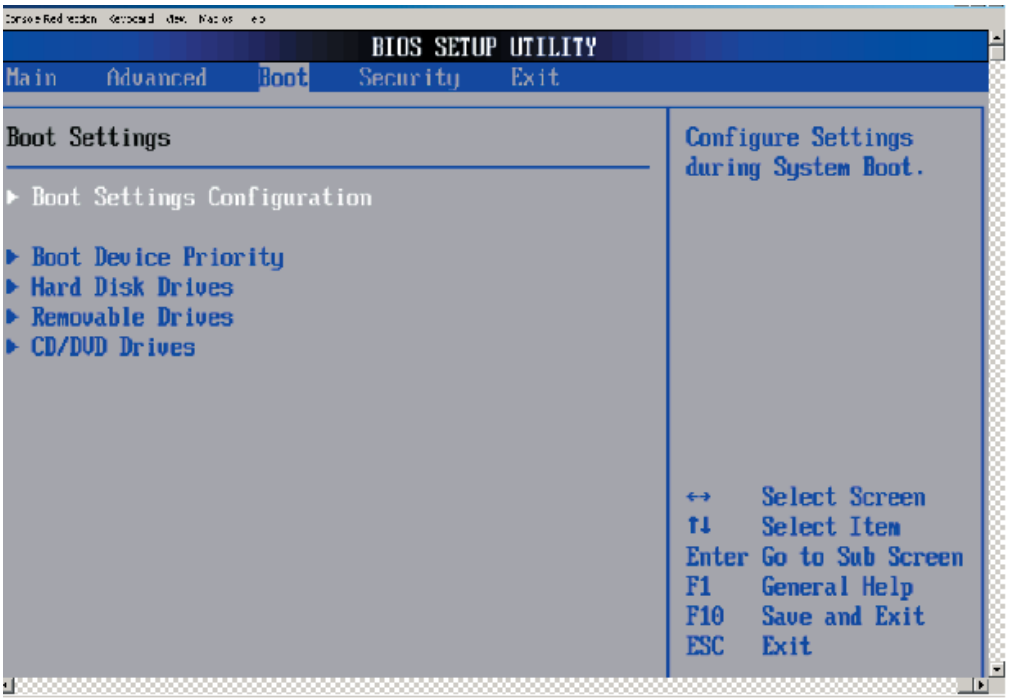
▶System Fan Monitor

Fan Speed Control Modes:

This feature allows the user to decide how the system controls the speed of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vise versa. If the option is set to "3-pin fan," the fan speed will be controlled by voltage. If the option is set to "4-pin," the fan speed will be controlled by Pulse Width Modulation (PWM). Select "3-pin" if your chassis came with 3-pin fan headers. Select "4-pin" if your chassis came with 4-pin fan headers. Select "Workstation" if your system is used as a Workstation. Select "Server" if your system is used as a Server. Select "Disable" to disable the fan speed control function to allow the onboard fans to run at full speed (12V) at all the time. The options are **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

Fan1 Speed to Fan6 Speeds

7-4 Boot Settings



▶BIOS Settings Configuration

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for system bootup. The options are **Enabled** and Disabled.

Quiet Boot

This option allows the boot up screen options to be modified between POST messages or the OEM logo. Select Disabled to allow the computer system to display the POST messages. Select **Enabled** to allow the computer system to display the OEM logo.

Add-On ROM Display Mode

This option allows the BIOS to display add-on ROM (read-only memory) messages. Select **Force BIOS** to display a third party BIOS during system boot. Select "Keep Current" to display the current BIOS information during system boot.

Boot up Num-Lock

This option allows the Number Lock setting to be modified during boot up. The default setting is **On**. The options are On and Off.

PS/2 Mouse Support

This option allows the PS/2 mouse support to be modified. The options are **Auto**, Enabled and Disabled.

Wait for 'F1' If Error

Select Enable to activate the function of Wait for F1 if Error. The options are **Enabled** and Disabled.

Hit 'DEL' Message Display

Select Enabled to display the Setup Message when the user hits the DEL key. The options are **Enabled** and Disabled.

Interrupt 19 Capture

Select Enabled to allow ROMs to trap Interrupt 19. The options are Enabled and **Disabled**.

Quiet Boot Progress Bar

Select Enabled to display a graphic bar that shows the progress of POST if the feature of Quiet Boot is enabled. The options are Enabled and **Disabled**.

▶Boot Device Priority

This feature allows the user to specify the Boot Device priority sequence.

The settings are 1st Floppy Drive, CD ROM, ATAPI CDROM and Disabled. The default settings are:

· 1st boot device – 1st Floppy Drive

· 2nd boot device – SM-Sony CD-ROM CDU

· 3rd boot device – 00, AIC-0791A: 1MA

· 4th boot device – IBA GE Slot 0300V

· 5th boot device – IBA GE Slot 0400V

▶Hard Disk Drives

This feature allows the user to specify the boot sequence from available Hard Drives.

1st Drive/2nd Drive/3rd Drive

· 1ST boot device – #328 ID01 LUN0 LSI

▶Removable Drives

This feature allows the user to specify the boot sequence from available Removable Drives.

1st Drive

This option allow the user to specify the boot sequence for 1st Removable Drive. The options are **1st Floppy Drive** and Disabled.

▶CD/DVD Drives

This feature allows the user to specify the boot sequence from available CD/DVD-Drives.

1st Drive

This option allows the user to specify the boot sequence for the 1st CD/DVD Drive. The options are **SM-Sony CD-ROM CDU**, AMI Virtual CDROM and Disabled.

2nd Drive

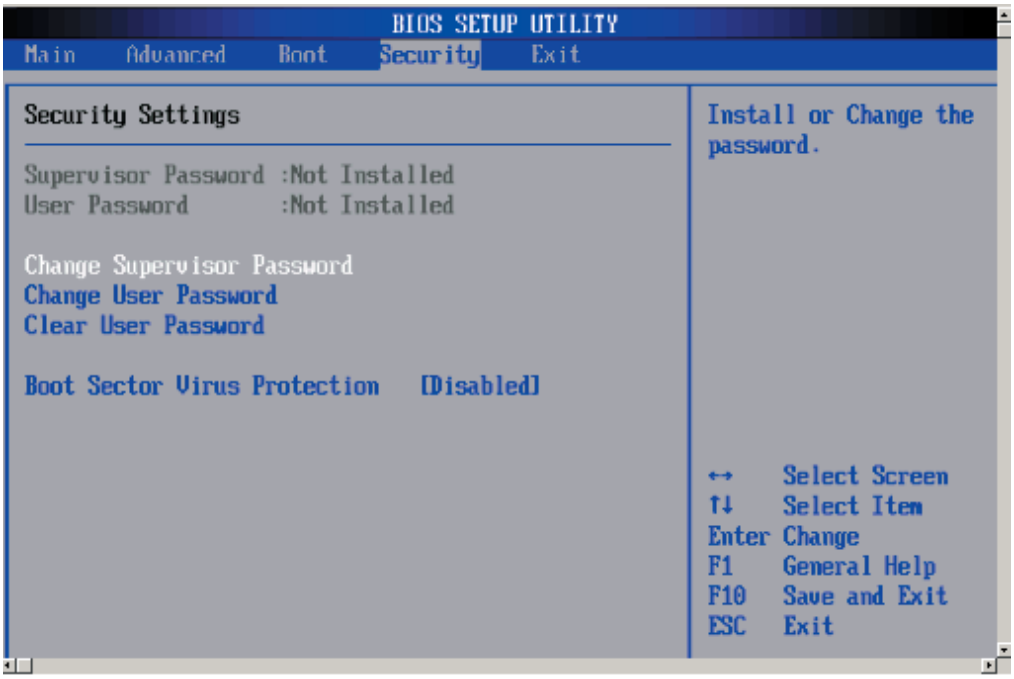
This option allows the user to specify the boot sequence for the 2nd CD/DVD Drive. The options are SM-MATSHITA CR-176, **AMI Virtual CDROM** and Disabled.

PCI-X Slot5 Option ROM/PCI-X Slot6 Option ROM

Select Enabled to display the Option ROMs stored in the add-on cards installed on PCI-X Slot5/PCI-X Slot6. The options are **Enabled** and Disabled.

7-5 Security Settings

The AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.



Change Supervisor Password

Select this option and press <Enter> to access the sub-menu, and then type in the password.

Change User Password

Select this option and press <Enter> to access the sub-menu, and then type in the password.

Clear User Password

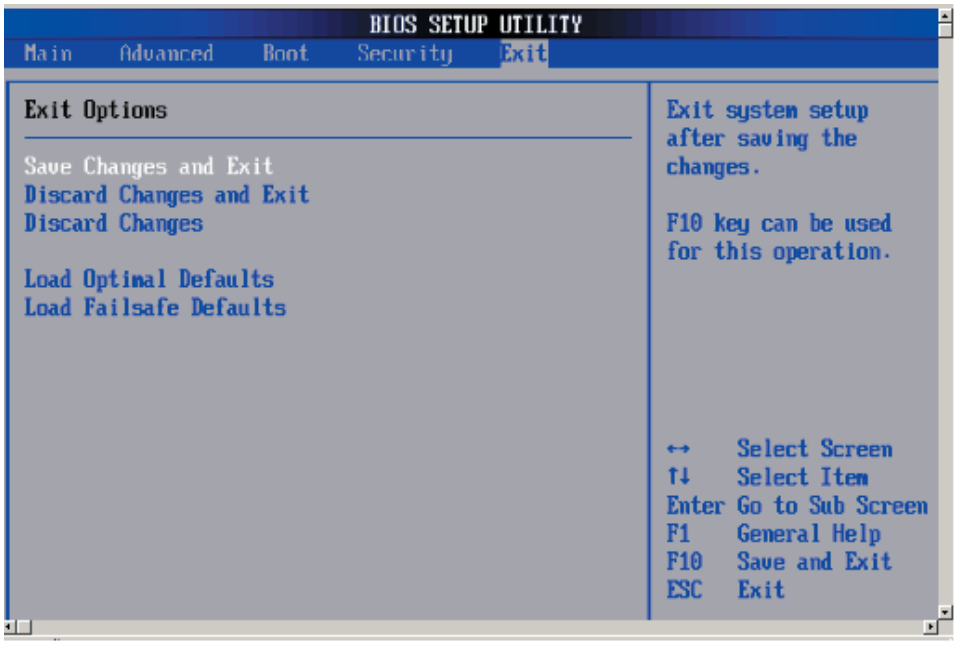
Select this option and press <Enter> to access the sub menu. You can use the sub menu to clear the user password.

Boot Sector Virus Protection

This option is near the bottom of the Security Setup screen. Select "Disabled" to deactivate the Boot Sector Virus Protection. Select "Enabled" to enable boot sector protection. When Enabled, AMIBOIS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

7-6 Exit Options

Select the Exit tab from the AMIBIOS Setup Utility screen to enter the Exit BIOS Setup screen.



Saving Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discarding Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discarding Changes

Select this option and press <Enter> to discard all the changes and return to the AMIBIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then, Select "OK" to allow the AMI BIOS to automatically load Optimal Defaults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list, on the following page, correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

POST codes may be read on the debug LEDs located beside the LAN port on the motherboard backplane. See the description of the Debug LEDs (LED1 and LED2) in Section 2-6.

A-1 AMIBIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up.)
5 short, 1 long	Memory error	No memory detected in system
8 beeps	Display memory read/write error	Video adapter missing or with faulty memory

A-2 DS7/DS8 LED Post Codes

LED Indicators		Description/Message
DS7	**DS8**	
On	On	PWR On
On	Off	SPD Read OK
Off	On	Memory Size-OK
Off	Off	Starting Bus Initialization

Appendix B

BIOS POST Checkpoint Codes

When AMIBIOS performs the Power On Self Test, it writes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, diagnostic equipment can be attached to the computer to read I/O port 0080h.

B-1 Uncompressed Initialization Codes

The uncompressed initialization checkpoint codes are listed in order of execution:

Checkpoint	Code Description
D0h	The NMI is disabled. Power on delay is starting. Next, the initialization code checksum will be verified.
D1h	Initializing the DMA controller, performing the keyboard controller BAT test, starting memory refresh and entering 4 GB flat mode next.
D3h	Starting memory sizing next.
D4h	Returning to real mode. Executing any OEM patches and setting the Stack next.
D5h	Passing control to the uncompressed code in shadow RAM at E000:0000h. The initialization code is copied to segment 0 and control will be transferred to segment 0.

B-2 Bootblock Recovery Codes

The bootblock recovery checkpoint codes are listed in order of execution:

Checkpoint	Code Description
E0h	The onboard floppy controller if available is initialized. Next, beginning the base 512 KB memory test.
E1h	Initializing the interrupt vector table next.
E2h	Initializing the DMA and Interrupt controllers next.
E6h	Enabling the floppy drive controller and Timer IRQs. Enabling internal cache memory.
Edh	Initializing the floppy drive.
Eeh	Looking for a floppy diskette in drive A:. Reading the first sector of the diskette.
Efh	A read error occurred while reading the floppy drive in drive A:.
F0h	Next, searching for the AMIBOOT.ROM file in the root directory.
F1h	The AMIBOOT.ROM file is not in the root directory.
F2h	Next, reading and analyzing the floppy diskette FAT to find the clusters occupied by the AMIBOOT.ROM file.
F3h	Next, reading the AMIBOOT.ROM file, cluster by cluster.
F4h	The AMIBOOT.ROM file is not the correct size.
F5h	Next, disabling internal cache memory.
FBh	Next, detecting the type of flash ROM.
FCh	Next, erasing the flash ROM.
FDh	Next, programming the flash ROM.
FFh	Flash ROM programming was successful. Next, restarting the system BIOS.

B-3 Uncompressed Initialization Codes

The following runtime checkpoint codes are listed in order of execution. These codes are uncompressed in F0000h shadow RAM.

Checkpoint	Code Description
03h	The NMI is disabled. Next, checking for a soft reset or a power on condition.
05h	The BIOS stack has been built. Next, disabling cache memory.
06h	Uncompressing the POST code next.
07h	Next, initializing the CPU and the CPU data area.
08h	The CMOS checksum calculation is done next.
0Ah	The CMOS checksum calculation is done. Initializing the CMOS status register for date and time next.
0Bh	The CMOS status register is initialized. Next, performing any required initialization before the keyboard BAT command is issued.
0Ch	The keyboard controller input buffer is free. Next, issuing the BAT command to the keyboard controller.
0Eh	The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test.
0Fh	The initialization after the keyboard controller BAT command test is done. The keyboard command byte is written next.
10h	The keyboard controller command byte is written. Next, issuing the Pin 23 and 24 blocking and unblocking command.
11h	Next, checking if <End or <Ins> keys were pressed during power on. Initializing CMOS RAM if the Initialize CMOS RAM in every boot AMIBIOS POST option was set in AMIBCP or the <End> key was pressed.
12h	Next, disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2.
13h	The video display has been disabled. Port B has been initialized. Next, initializing the chipset.
14h	The 8254 timer test will begin next.
19h	Next, programming the flash ROM.
1Ah	The memory refresh line is toggling. Checking the 15 second on/off time next.
2Bh	Passing control to the video ROM to perform any required configuration before the video ROM test.
2Ch	All necessary processing before passing control to the video ROM is done. Looking for the video ROM next and passing control to it.
2Dh	The video ROM has returned control to BIOS POST. Performing any required processing after the video ROM had control
23h	Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors.
24h	The configuration required before interrupt vector initialization has completed. Interrupt vector initialization is about to begin.

Checkpoint	Code Description
25h	Interrupt vector initialization is done. Clearing the password if the POST DIAG switch is on.
27h	Any initialization before setting video mode will be done next.
28h	Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next.
2Ah	Bus initialization system, static, output devices will be done next, if present. See the last page for additional information.
2Eh	Completed post-video ROM test processing. If the EGA/VGA controller is not found, performing the display memory read/write test next.
2Fh	The EGA/VGA controller was not found. The display memory read/write test is about to begin.
30h	The display memory read/write test passed. Look for retrace checking next.
31h	The display memory read/write test or retrace checking failed. Performing the alternate display memory read/write test next.
32h	The alternate display memory read/write test passed. Looking for alternate display retrace checking next.
34h	Video display checking is over. Setting the display mode next.
37h	The display mode is set. Displaying the power on message next.
38h	Initializing the bus input, IPL, general devices next, if present. See the last page of this chapter for additional information.
39h	Displaying bus initialization error messages. See the last page of this chapter for additional information.
3Ah	The new cursor position has been read and saved. Displaying the Hit <DEL> message next.
3Bh	The Hit <DEL> message is displayed. The protected mode memory test is about to start.
40h	Preparing the descriptor tables next.
42h	The descriptor tables are prepared. Entering protected mode for the memory test next.
43h	Entered protected mode. Enabling interrupts for diagnostics mode next.
44h	Interrupts enabled if the diagnostics switch is on. Initializing data to check memory wraparound at 0:0 next.
45h	Data initialized. Checking for memory wraparound at 0:0 and finding the total system memory size next.
46h	The memory wraparound test is done. Memory size calculation has been done. Writing patterns to test memory next.
47h	The memory pattern has been written to extended memory. Writing patterns to the base 640 KB memory next.
48h	Patterns written in base memory. Determining the amount of memory below 1 MB next.
49h	The amount of memory below 1 MB has been found and verified.
4Bh	The amount of memory above 1 MB has been found and verified. Checking for a soft reset and clearing the memory below 1 MB for the soft reset next. If this is a power on situation, going to checkpoint 4Eh next.

Checkpoint	Code Description
4Ch	The memory below 1 MB has been cleared via a soft reset. Clearing the memory above 1 MB next.
4Dh	The memory above 1 MB has been cleared via a soft reset. Saving the memory size next. Going to checkpoint 52h next.
4Eh	The memory test started, but not as the result of a soft reset. Displaying the first 64 KB memory size next.
4Fh	The memory size display has started. The display is updated during the memory test. Performing the sequential and random memory test next.
50h	The memory below 1 MB has been tested and initialized. Adjusting the displayed memory size for relocation and shadowing next.
51h	The memory size display was adjusted for relocation and shadowing.
52h	The memory above 1 MB has been tested and initialized. Saving the memory size information next.
53h	The memory size information and the CPU registers are saved. Entering real mode next.
54h	Shutdown was successful. The CPU is in real mode. Disabling the Gate A20 line, parity, and the NMI next.
57h	The A20 address line, parity, and the NMI are disabled. Adjusting the memory size depending on relocation and shadowing next.
58h	The memory size was adjusted for relocation and shadowing. Clearing the Hit <DEL> message next.
59h	The Hit <DEL> message is cleared. The <WAIT...> message is displayed. Starting the DMA and interrupt controller test next.
60h	The DMA page register test passed. Performing the DMA Controller 1 base register test next.
62h	The DMA controller 1 base register test passed. Performing the DMA controller 2 base register test next.
65h	The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.
66h	Completed programming DMA controllers 1 and 2. Initializing the 8259 interrupt controller next.
67h	Completed 8259 interrupt controller initialization.
7Fh	Extended NMI source enabling is in progress.
80h	The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next.
81h	A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.
82h	The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.
83h	The command byte was written and global data initialization has completed. Checking for a locked key next.
84h	Locked key checking is over. Checking for a memory size mismatch with CMOS RAM data next.
85h	The memory size check is done. Displaying a soft error and checking for a password or bypassing WINBIOS Setup next.

Checkpoint	Code Description
86h	The password was checked. Performing any required programming before WINBIOS Setup next.
87h	The programming before WINBIOS Setup has completed. Uncompressing the WINBIOS Setup code and executing the AMIBIOS Setup or WINBIOS Setup utility next.
88h	Returned from WINBIOS Setup and cleared the screen. Performing any necessary programming after WINBIOS Setup next.
89h	The programming after WINBIOS Setup has completed. Displaying the power on screen message next.
8Ch	Programming the WINBIOS Setup options next.
8Dh	The WINBIOS Setup options are programmed. Resetting the hard disk controller next.
8Fh	The hard disk controller has been reset. Configuring the floppy drive controller next.
91h	The floppy drive controller has been configured. Configuring the hard disk drive controller next.
95h	Initializing the bus option ROMs from C800 next. See the last page of this chapter for additional information.
96h	Initializing before passing control to the adaptor ROM at C800.
97h	Initialization before the C800 adaptor ROM gains control has completed. The adaptor ROM check is next.
98h	The adaptor ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control.
99h	Any initialization required after the option ROM test has completed. Configuring the timer data area and printer base address next.
9Ah	Set the timer and printer base addresses. Setting the RS-232 base address next.
9Bh	Returned after setting the RS-232 base address. Performing any required initialization before the Coprocessor test next.
9Ch	Required initialization before the Coprocessor test is over. Initializing the Coprocessor next.
9Dh	Coprocessor initialized. Performing any required initialization after the Coprocessor test next.
9Eh	Initialization after the Coprocessor test is complete. Checking the extended keyboard, keyboard ID, and Num Lock key next. Issuing the keyboard ID command next.
A2h	Displaying any soft errors next.
A3h	The soft error display has completed. Setting the keyboard typematic rate next.
A4h	The keyboard typematic rate is set. Programming the memory wait states next.
A5h	Memory wait state programming is over. Clearing the screen and enabling parity and the NMI next.
A7h	NMI and parity enabled. Performing any initialization required before passing control to the adaptor ROM at E000 next.
A8h	Initialization before passing control to the adaptor ROM at E000h completed. Passing control to the adaptor ROM at E000h next.

Checkpoint	Code Description
A9h	Returned from adaptor ROM at E000h control. Performing any initialization required after the E000 option ROM had control next.
Aah	Initialization after E000 option ROM control has completed. Displaying the system configuration next.
Abh	Uncompressing the DMI data and executing DMI POST initialization next.
B0h	The system configuration is displayed.
B1h	Copying any code to specific areas.
00h	Code copying to specific areas is done. Passing control to INT 19h boot loader next.

Notes

Appendix C

Software Installation

After all the hardware has been installed, you must first configure the Adaptec Embedded Serial ATA RAID driver before you install the Windows operating system. The necessary drivers are all included on the Supermicro bootable CDs that came packaged with your serverboard.

The following section provides information on Adaptec's SATA RAID driver based on the Intel ICH5R/6300ESB controller.

C-1 Introduction

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that uses a single cable with a minimum of four wires to create a point-to-point connection between devices. SATA is a serial link that supports transfer rates from 150MBps. Because the SATA cables are thinner than the traditional cables used for Parallel ATA (PATA), SATA systems have better airflow and can be installed in smaller chassis than PATA. In addition, PATA cables can only extend to 40 cm long, while SATA cables can extend up to one meter. Overall, Serial ATA provides better functionality than Parallel ATA.

Intel 6300ESB I/O Controller Hub

Located in the South Bridge of Intel's E7520 chipset, the 6300ESB I/O controller hub provides the I/O subsystem with access to the rest of the system. It supports a dual-channel Ultra ATA/100 Bus Master IDE controller (PATA) and two Serial ATA (SATA) Host controllers, which can support up to two Serial ATA ports and two RAID drives. The 6300ESB I/O controller hub supports the following Parallel ATA and Serial ATA device configurations:

Configuring SATA RAID

Note: applies only to Operating Systems that support RAID functions (Windows, Red Hat & SuSe, Linux, etc.)

1. Select "Advanced Setting" from the AMI BIOS menu.

2. Select the IDE Configuration menu.

3. Change the IDE Configuration to "P-ATA Only."

4. Under the item-"Configure S-ATA as RAID", select "Yes".

5. Tap the <Esc> key and scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

6. Once you've exited the BIOS Utility, the system will re-boot.

7. During the system startup, press the <Ctrl> and the <A> keys simultaneously to run the Adaptec RAID Configuration Utility when prompted by the following message:

Press <Ctrl><A> for the Adaptec RAID Configuration Utility.

Adaptec SATA HostRAID Controller Driver

Adaptec's Embedded SATA RAID with HostRAID controller adds RAID functionality to the SATA I/O controller and enhances the performance of PCI-Express based products. RAID striping (RAID 0) allows data to be written across across multiple drives, greatly improving hard disk I/O performance. RAID mirroring (RAID 1) allows data to be simultaneously written to two drives, improving data security even if a single hard disk fails. By incorporating Adaptec's Embedded SATA into the serverboard design, the X6DLP-4G2 offers the user the benefits of SATA RAID without the high costs associated with hardware RAID applications.

Note: For instructions on installing Adaptec's RAID driver, please refer to the Adaptec RAID Controller User's Guide ("Emb_SA_RAID_UG.pdf") in the CD that came with the serverboard. You can also download a copy of Adaptec's User's Guide from our web site at www.supermicro.com.

Adaptec RAID Configuration Utility (ARC)

The Adaptec RAID Configuration utility, an embedded BIOS utility, includes the following:

Array Configuration Utility: Use this utility to create, configure and manage arrays.

Disk Utilities: Use this option to format or verify disks.

To run the Adaptec RAID Configuration utility, do to the following:

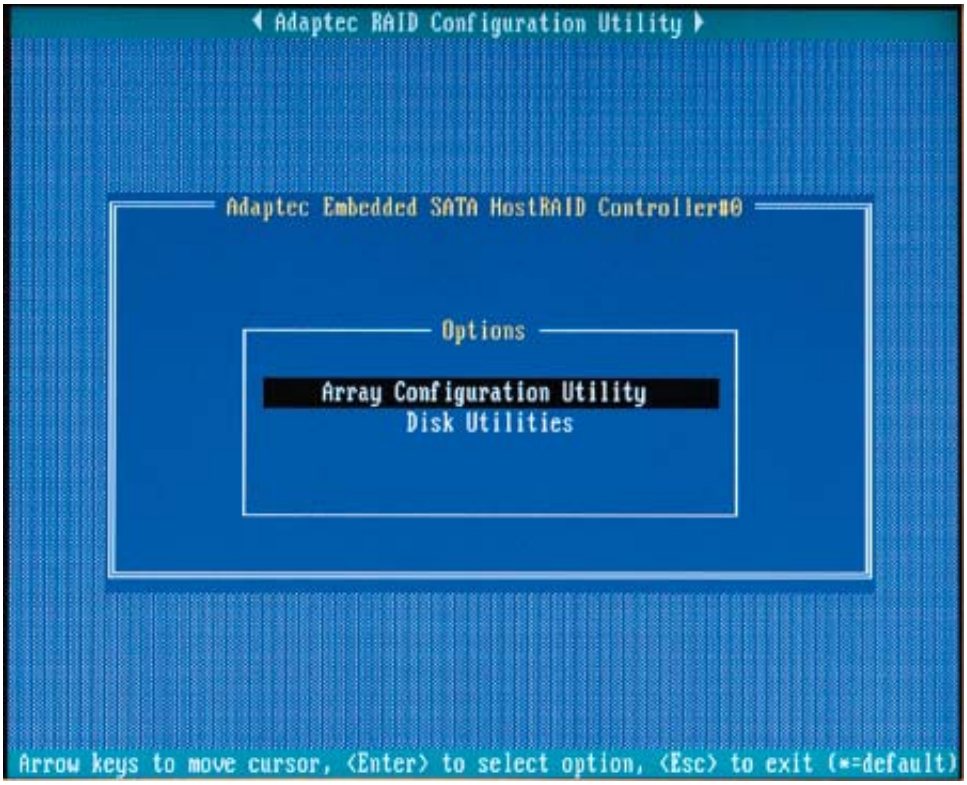
1. Enable the RAID function in the system BIOS (refer to Chapter 7 for System BIOS Configurations).

2. Press the <Ctrl> and <A> keys simultaneously when prompted to do so during system boot. (Refer to the previous page for detailed instructions.)

Using the Array Configuration Utility (ACU)

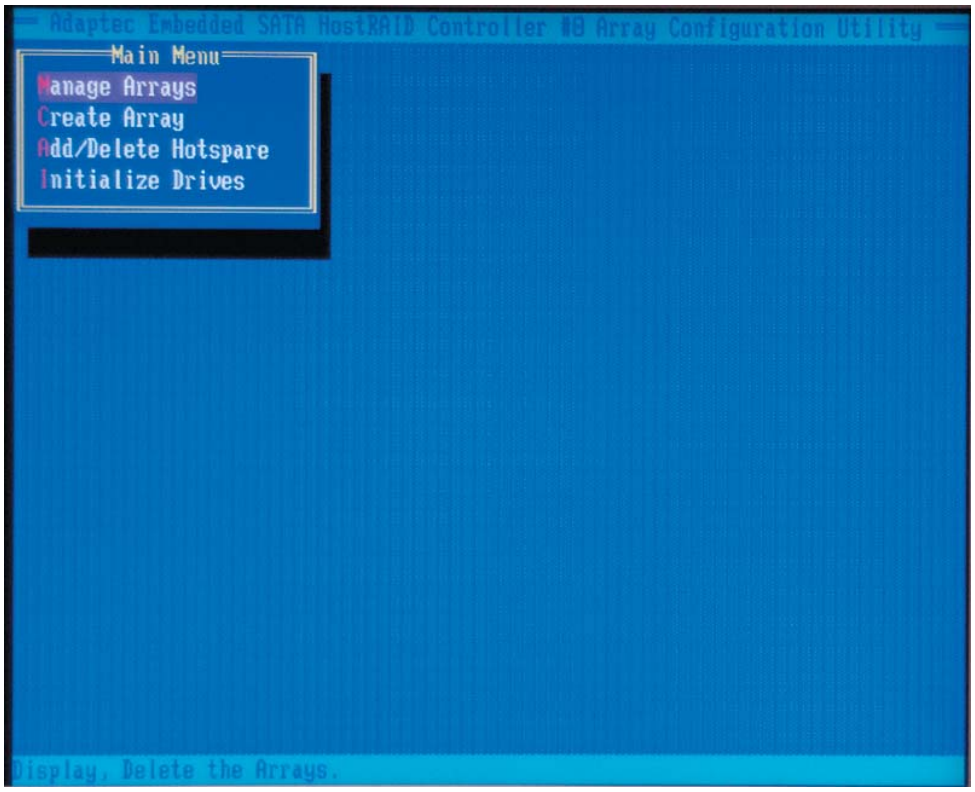
When you press <Ctrl> and <A> keys simultaneously at the prompt during system bootup, the main menu will appear as seen below.

Note: To select an option, use the arrow keys to highlight the item and then press the <Enter> key to select it. To return to the previous menu, press the <Esc> key.


Adaptec RAID Configuration Utility
Adaptec Embedded SATA HostRAID Controller#0
Options
Array Configuration Utility
Disk Utilities
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

Managing Arrays

Select this option to view array properties and configure array settings.



Viewing Array Properties

To view the properties of an existing array:

1. At the BIOS prompt, press Ctrl+A.
2. From the ARC menu, select Array Configuration Utility (ACU).
3. From the ACU menu, select Manage Arrays (as shown above.)
4. From the List of Arrays dialog box, select the array you want to view and press Enter.

The Array Properties dialog box appears, showing detailed information on the array. The physical disks associated with the array are displayed here.

5. Press Esc to return to the previous menu.

Deleting Arrays

Warning: Back up the data on an array before you delete it to prevent data loss Deleted arrays cannot be restored.

To delete an existing array:

1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility.

2. From the ARC main menu, select Array Configuration Utility (ACU).

3. From the ACU menu, select Manage Arrays.

4. Select the array you wish to delete and press Delete.

5. In the Array Properties dialog box, select Delete and press Enter. The following prompt is displayed:
Warning!! Deleting the array will render array unusable. Do you want to delete the array?(Yes/No):

RAID 1 only—the following prompt is also displayed:

Deleting the partition will result in data loss! Do you also want to delete the partition? (Yes/No):

6. Press Yes to delete the array or partition or No to return to the previous menu.

7. Press Esc to return to the previous menu.

Creating Arrays

Before you create arrays, make sure that the disks for the array are connected and installed in your system. Note that disks with no usable space and disks that are un-initialized are shown in gray and cannot be used. See *Initializing Disk Drives*.

To create an array

1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility.

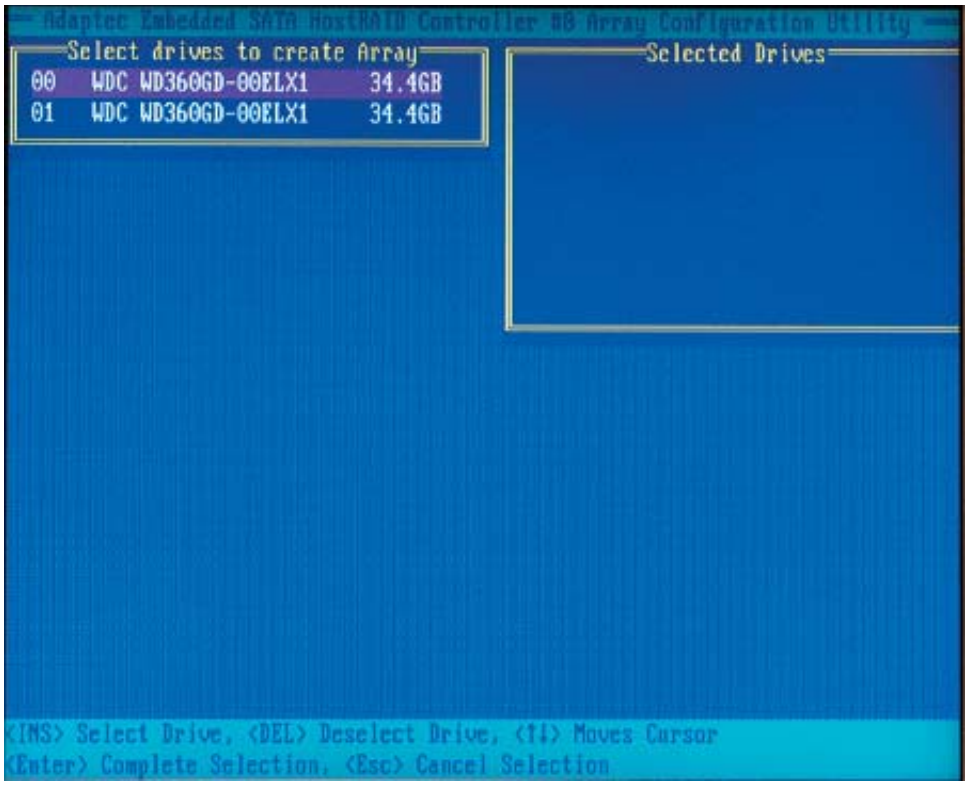
2. From the ARC menu, select Array Configuration Utility Main Menu.

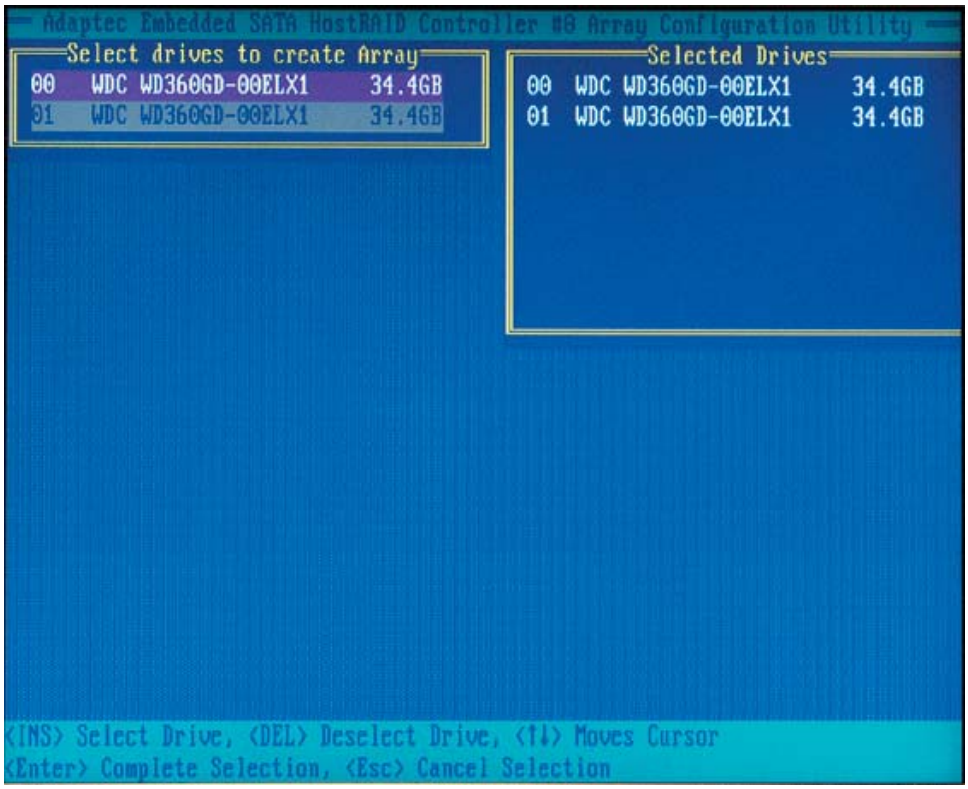
3. From the ACU menu, select Create Array.

4. Select the disks for the new array and press Insert (as shown in the screenshot below).

Note: To de-select any disk, highlight the disk and press Delete.

5. Press Enter when both disks for the new array are selected. The Array Properties menu displays (as the third following screenshot shows).


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Select drives to create Array
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
Selected Drives
<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Select drives to create Array
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
Selected Drives
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection

Assigning Array Properties

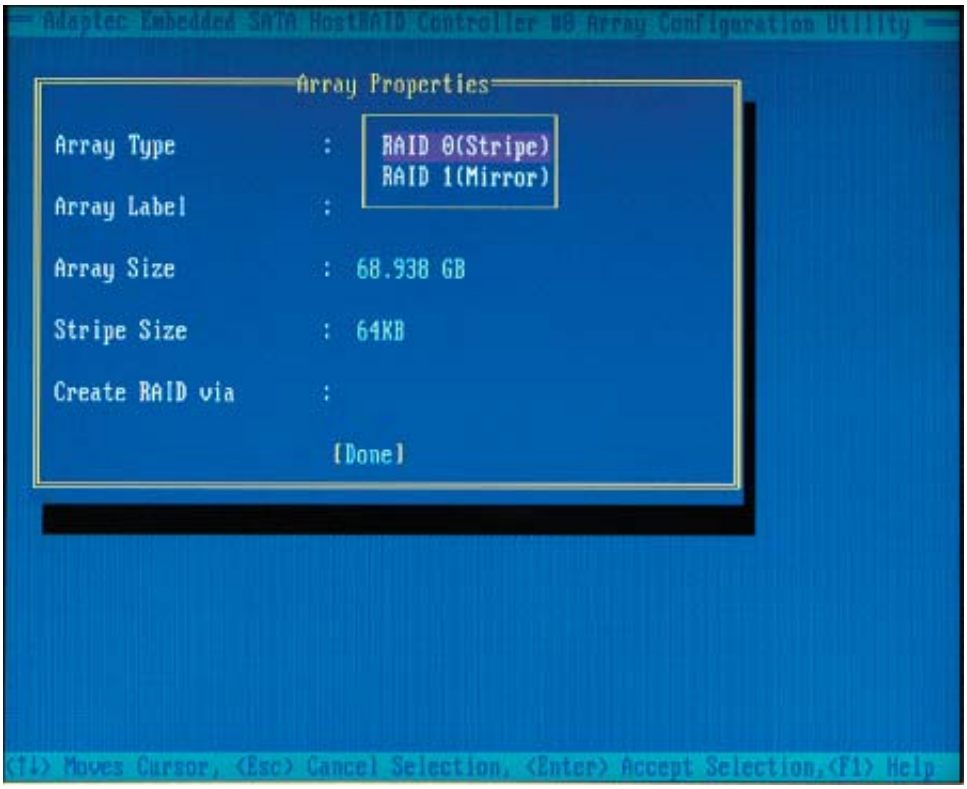
Once you've create a new array, you are ready to assign properties to it.

Caution: Once the array is created and its properties are assigned, you cannot change the array properties using the ACU.

To assign properties to the new array:

1. In the Array Properties menu, select an array type and press Enter.

Only the available array types will be displayed on the screen. (RAID 0 or RAID 1 requires two drives.)



2. Under the item "Arrays Label", type in a label and press Enter. (The label cannot contain more than 15 characters.)

3. For RAID 0, select the desired stripe size. Available stripe sizes are 16, 32, and (the default) 64 KB. It is recommended that you do not change the default setting.

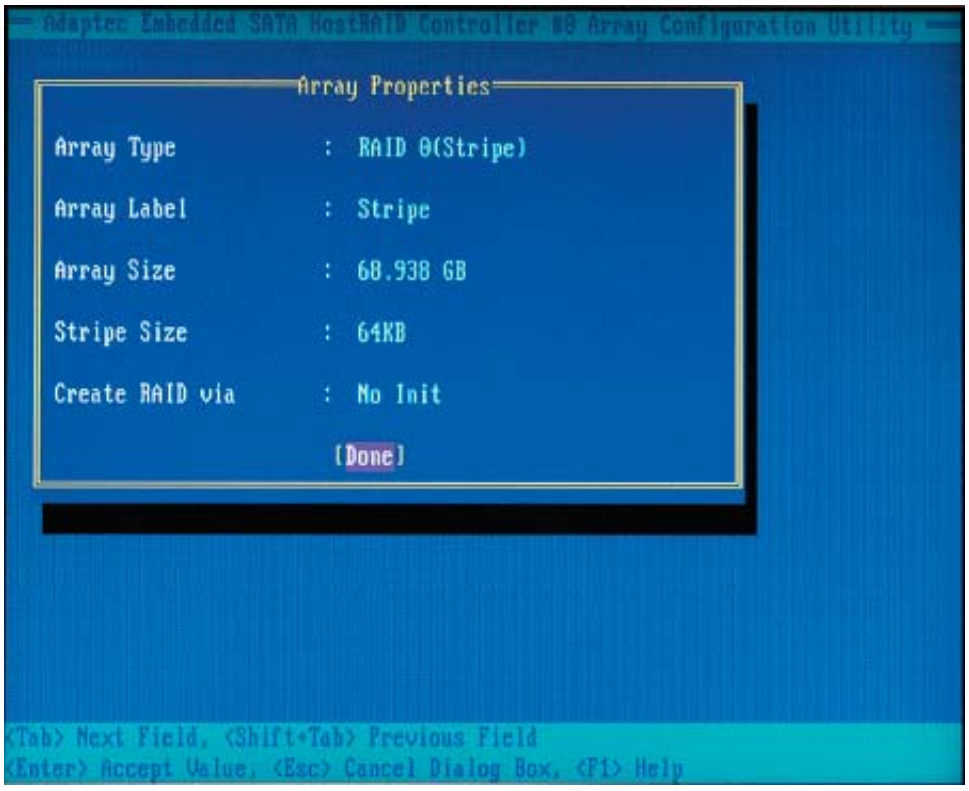
4. The item: "Create RAID via" allows you to select between the different ways of creating RAID 0 and RAID 1 arrays.

The following table gives examples of when each is appropriate.

RAID Levels		
RAID Level	Create Via	When Appropriate
RAID 0	No Init.	Creating a RAID 0 on new drives
RAID 0	Migrate*	Creating a RAID 0 from one new drive and one drive with data you wish to preserve
RAID 1	Build 1	Any time you wish to create a RAID 1 but especially if you have data on one drive you wish to preserve
RAID 1	Clear	Creating a RAID 1 on new drives or when you want to ensure that the array contains no data after creation
RAID 1	Quick	Fastest way to creata a RAID 1. Appropriate when using new drives
RAID 1	Init	Fastest way to creata a RAID 1. Appropriate when using new drives

*If you select Migrate for RAID 0, or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved, however the data on the new drive will be lost.

5. When you are finished, press Done (as the screen shown below).



Notes:

1. Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.

2. If you stop the Build or Clear process on a RAID 1 from ACU, you can restart it by pressing Ctrl+R.

3. A RAID 1 created using the Quick Init option may return some data miscompares if you later run a consistency check. This is normal and is not a cause for concern.

4. The ACU allows you to use drives of different sizes in a RAID. However, during a build operation, only the smaller drive can be selected as the source or first drive.

5. When migrating from a single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.

6. Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

Warning: Do not interrupt the creation of a RAID 0 using the Migrate option. If you do, you will not be able to restart or recover the data from the source drive.

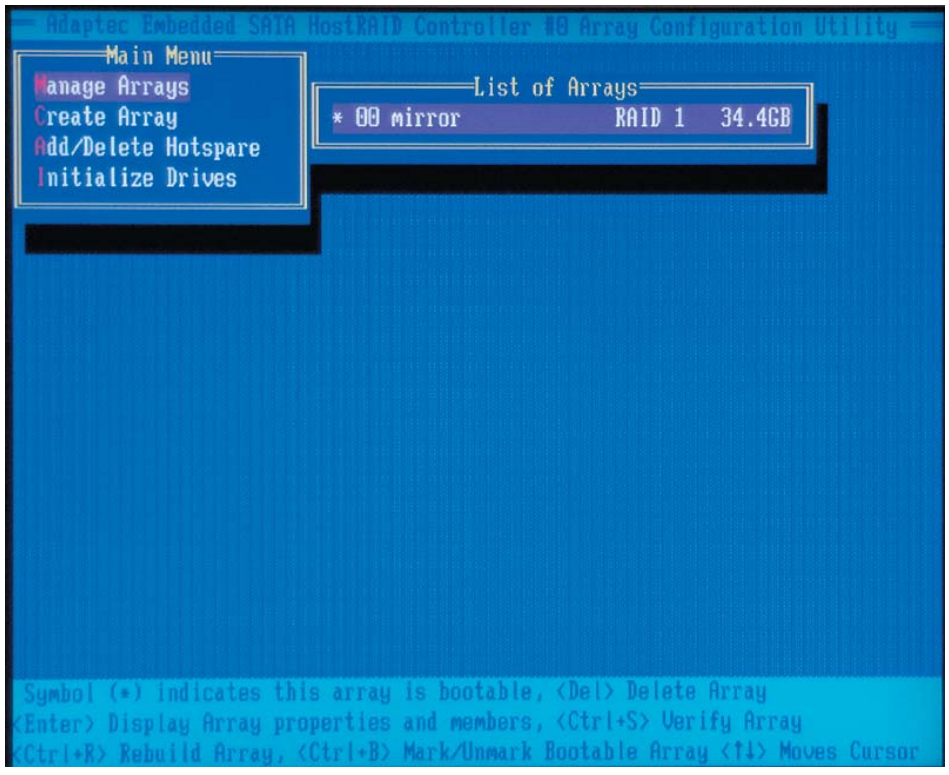
Adding a Bootable Array

To make an array bootable:

1. From the Main menu, select Manage Arrays.

2. From the List of Arrays, select the array you want to make bootable and press Ctrl+B.

3. Enter Y to create a bootable array when the following message is displayed: "This will make all other existing bootable array non-bootable. Do you want to make this array bootable? (Yes/No):" A bootable array will then be created. An asterisk will appear next to the bootable array (as shown in the picture below:)


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Main Menu
Manage Arrays
Create Array
Add/Delete Hotspare
Initialize Drives
List of Arrays
* 00 mirror RAID 1 34.4GB
Symbol (*) indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl+S> Verify Array
<Ctrl+R> Rebuild Array, <Ctrl+B> Mark/Unmark Bootable Array <↑↓> Moves Cursor

Deleting a Bootable Array

To delete a bootable array:

1. From the Main menu, select Manage Arrays.

2. From the List of Arrays, select the bootable array you want to delete, and press Ctrl+B. (A bootable array is an array marked with an asterisk, as shown in the screenshot above.)

3. Enter Y to delete a bootable array when the following message is displayed: "The array is already marked bootable. Do you want to make this array as not bootable? (Yes/No):" The bootable array will then be deleted and the asterisk will disappear.

Note: do not use the delete key to delete the bootable array.

Initializing Disk Drives

If an installed disk does not appear in the disk selection list for creating a new array or if it appears grayed out, you may have to initialize it before you can use it as part of an array. Drives attached to the controller must be initialized before they can be used in an array.

Caution: Initializing a disk overwrites the partition table on the disk and makes any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

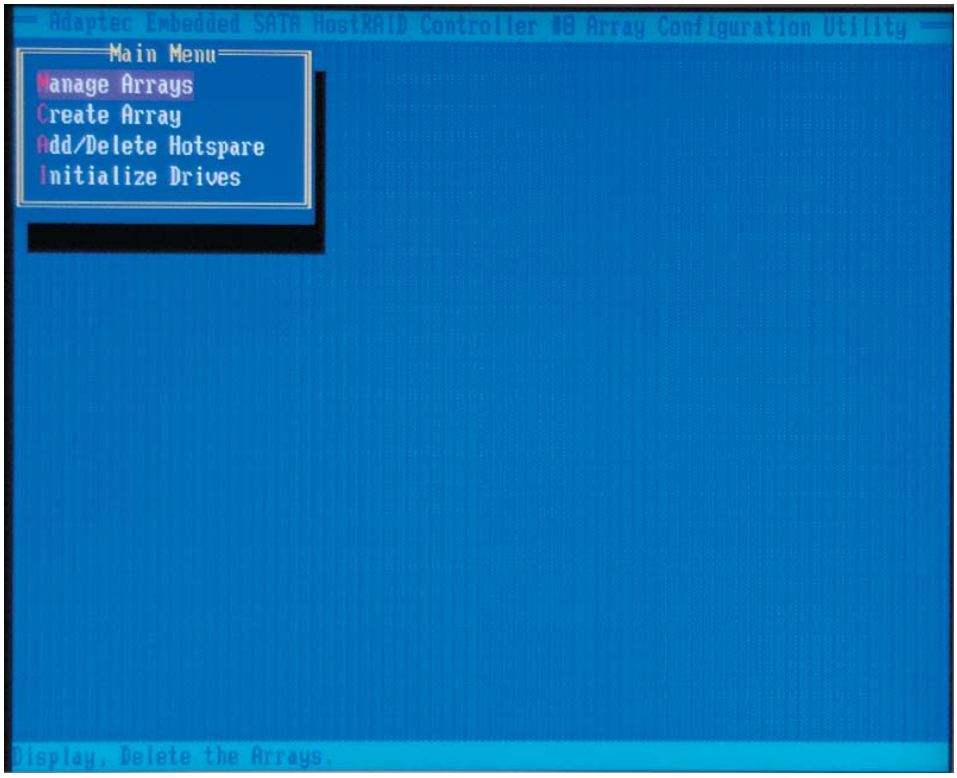
Do not initialize a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to *Viewing Array Properties.*

To initialize drives:

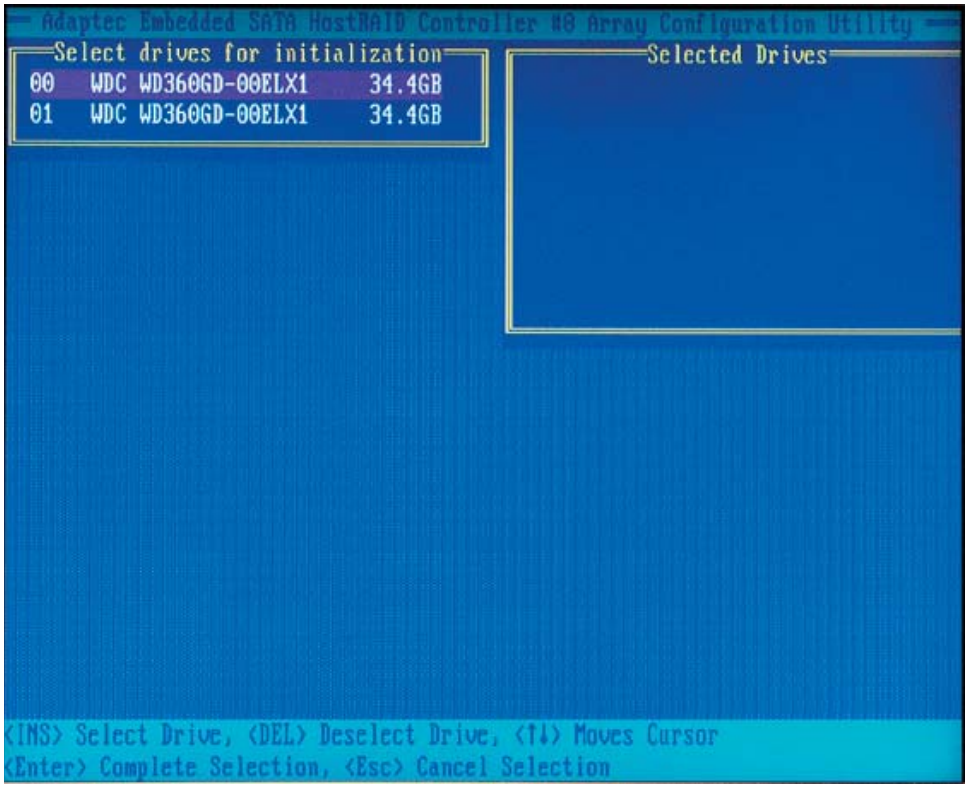
1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility.

2. From the ARC menu, select the Array Configuration Utility (ACU).

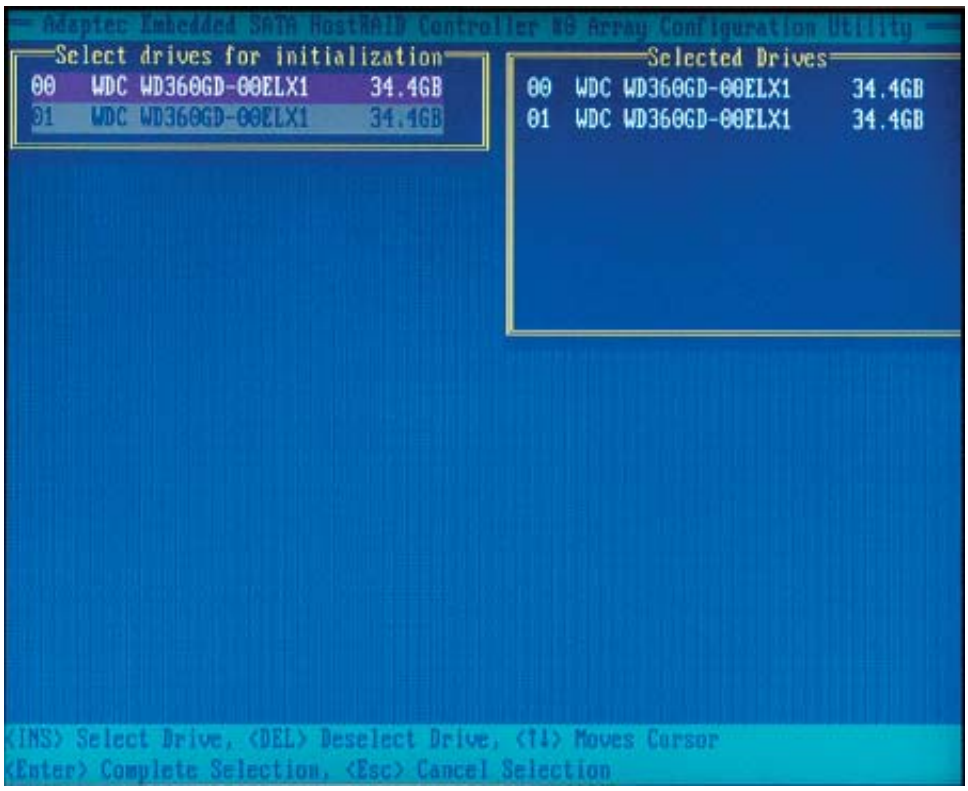
3. Select Initialize Drives (as shown in the next screenshot).



4. Use the up and down arrow keys to highlight the disk you wish to initialize and press Insert (as shown in the screenshot below).

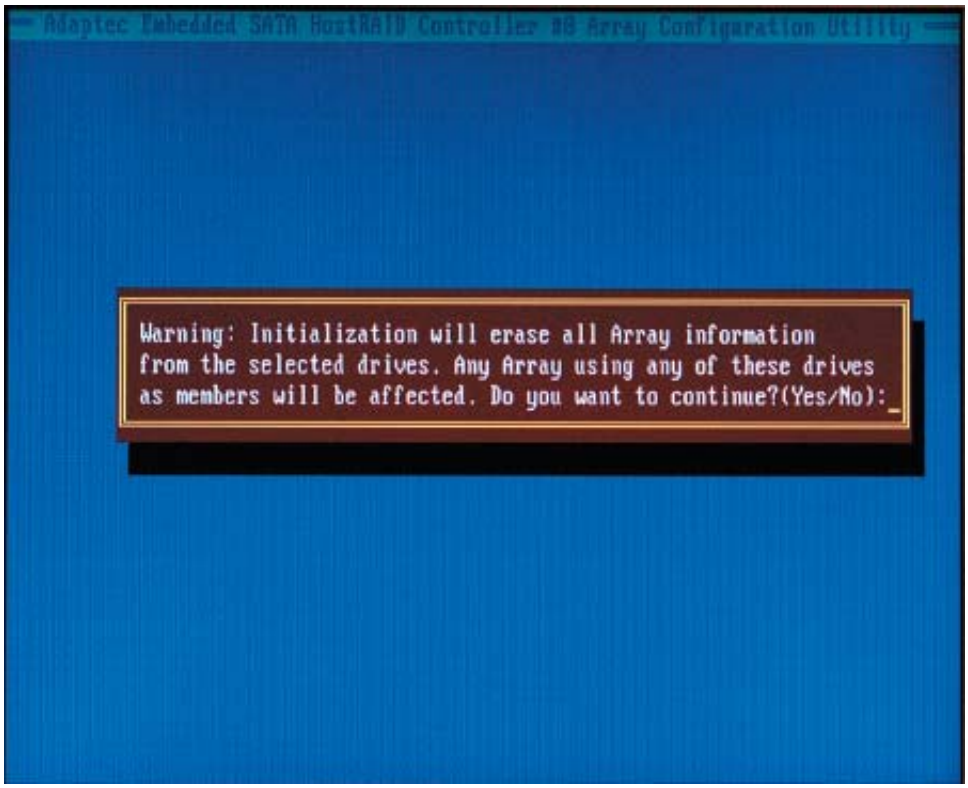

Adaptec Embedded SATA HostRAID Controller WB Array Configuration Utility
Select drives for initialization
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
Selected Drives
<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection

5. Repeat Step 4 so that both drives to be initialized are selected (as shown below).


Select drives for initialization
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
Selected Drives
00 WDC WD360GD-00ELX1 34.4GB
01 WDC WD360GD-00ELX1 34.4GB
<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection

6. Press Enter.

7. Read the warning message as shown in the screen.


Warning: Initialization will erase all Array information
from the selected drives. Any Array using any of these drives
as members will be affected. Do you want to continue?(Yes/No):

8. Make sure that you have selected the correct disk drives to initialize. If correct, type Y to continue.

Rebuilding Arrays

Notes:

Rebuilding applies to Fault Tolerant arrays (RAID 1) only.

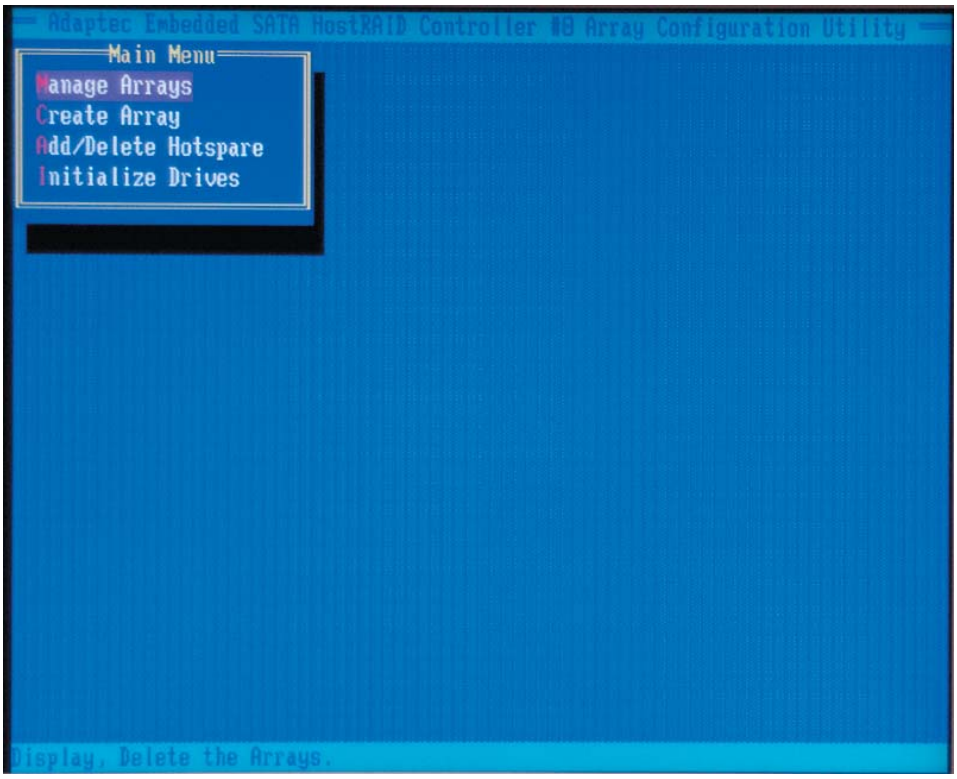
If an array Build process (or initialization) is interrupted or critical with one member missing, you must perform a Rebuild to optimized its functionality. For a critical array Rebuild operation, the optimal drive is the source drive.

If no spare array exists and a hard disk drive fails, you need to create a spare before you can rebuild an array.

To rebuild an array:

1. From the Main Menu, select Manage Arrays (as shown in the screen below). From the list of arrays, select the array you want to rebuild.

2. Press Ctrl+R to rebuild.



Using the Disk Utilities

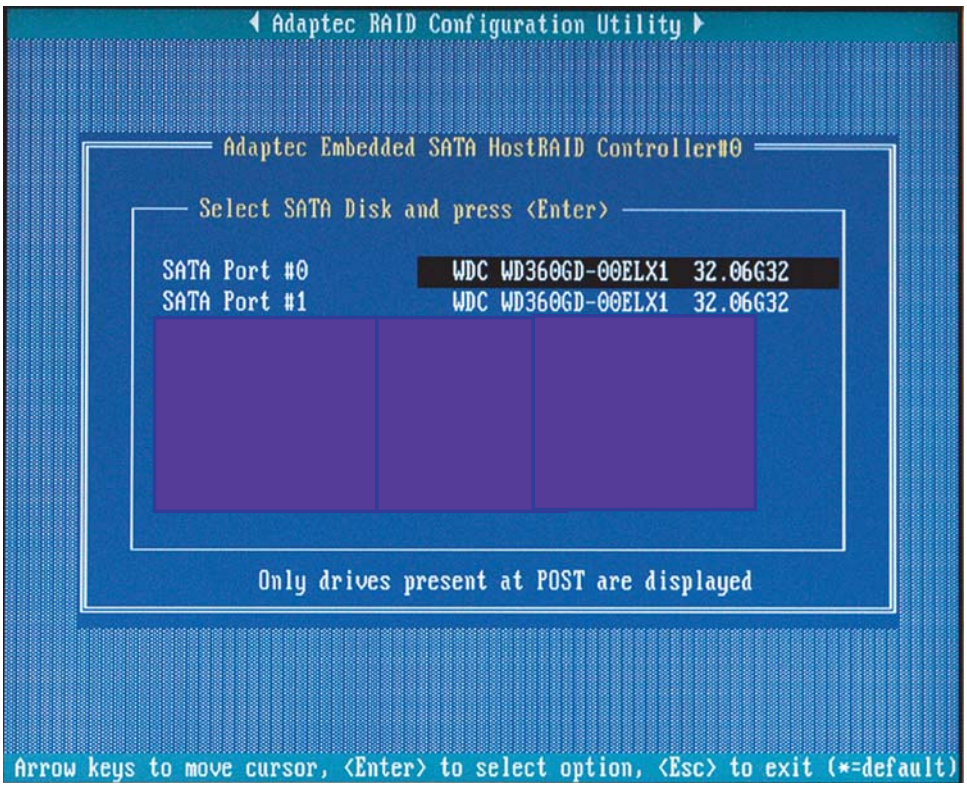
The Disk Utilities enable you to format or verify the media of your Serial ATA hard disks.

To access the disk utilities:

1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility.

2. From the ARC menu, select Disk Utilities.

3. Select the desired disk and press Enter (as shown below.)


Adaptec RAID Configuration Utility
Adaptec Embedded SATA HostRAID Controller#0
Select SATA Disk and press <Enter>
SATA Port #0 WDC WD360GD-00ELX1 32.06G32
SATA Port #1 WDC WD360GD-00ELX1 32.06G32
Only drives present at POST are displayed
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

You can choose from the following options:

1. Format Disk: Simulates a low-level format of the hard drive by writing zeros to the entire disk. Serial ATA drives are low-level formatted at the factory and do not need to be low-level formatted again.

Caution: Formatting destroys all data on the drive. Be sure to back up your data before performing this operation.

2. Verify Disk Media—Scans the media of a disk drive for defects.

Exiting the Adaptec RAID Configuration Utility

1. Once you have completed RAID array configurations, press Esc to exit.
2. Select and press Yes to exit the Utility.

C-2 Installing the ICH5R/6300 ESBDriver

1. Insert Supermicro's bootable CD into the CD drive before a system reboot, and the screen "Super Micro Driver Diskette Maker" will appear.

2. Choose "Intel ICH5R/6300 ESB Driver by 3rd Party (Adaptec)" from the list and press <Enter>.

3. From the next screen displayed, choose the OS driver you want to install and press <Enter>.

4. Insert a formatted diskette into drive A: and press <Enter> as prompted.

5. Exit the program after the process is completed. Then, reboot the system.

6 Insert the Microsoft Windows OS Setup CD in the CD drive, and the system will start to boot up from the CD.

7. Press the <F6> key when the message "Press F6 if you need to install a third party SCSI or RAID driver" displays.

8. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

9. Insert the driver diskette "Adaptec Embedded Serial ATA Raid Controller Driver" into drive A: and press the <Enter> key.

10. Choose "Adaptec Embedded Host Serial ATA Raid Controller" from the list indicated in the Windows OS Setup Screen, and press the <Enter> key.

11. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do so at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

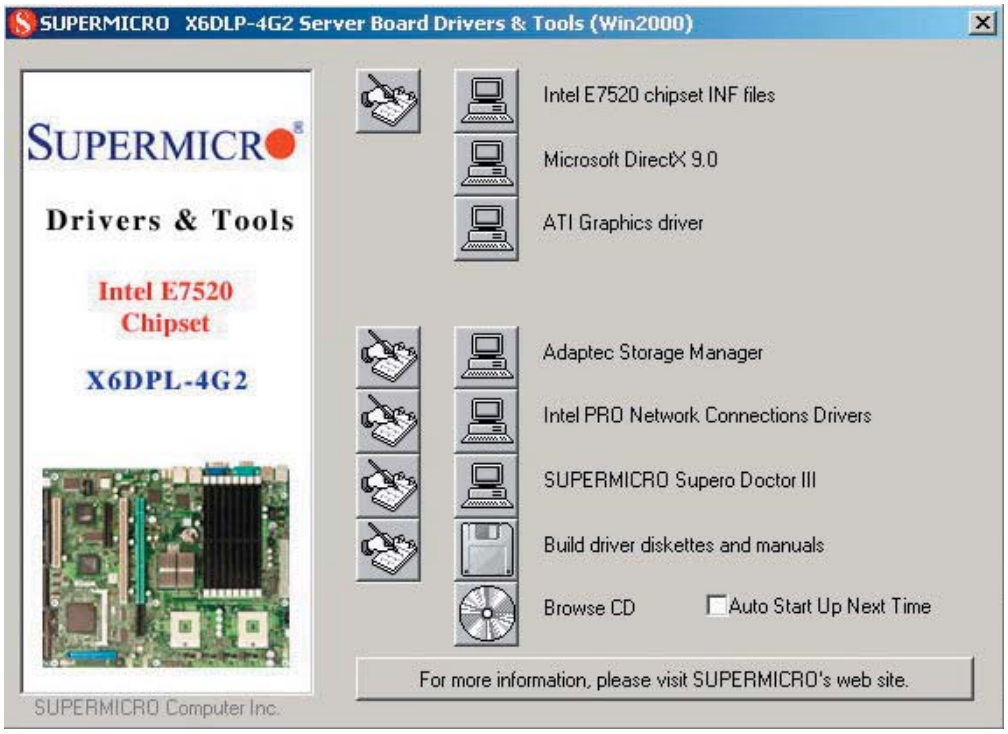
12. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files and then, continue the Windows OS installation.

13. After the Windows OS installation is completed, the system will automatically reboot.

C-3 Installing Other Software Programs and Drivers

A. Installing Additional Drivers

After you've installed the Windows Operating System, the screen shown below will appear. You are now ready to install additional software and drivers. To install, click the icons to the right of these items.



Driver/Tool Installation Display Screen

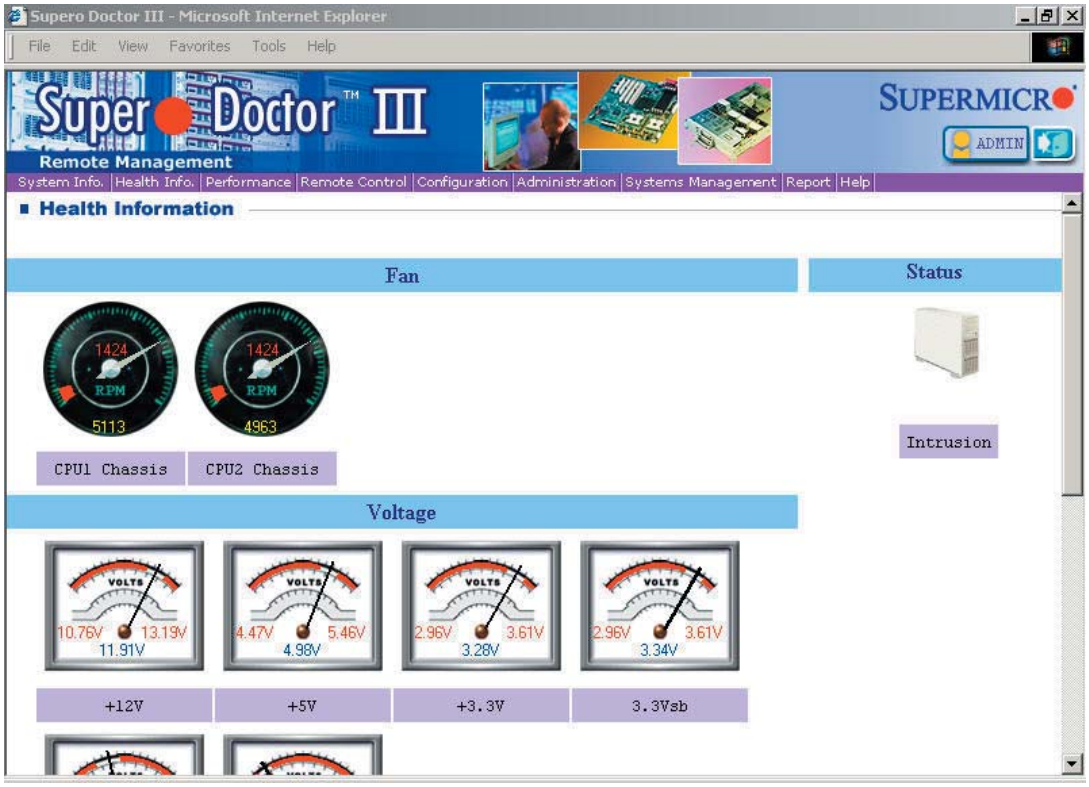
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** You should install everything here except for the Super Doctor utility, which is optional. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Supero Doctor III

The Supero Doctor III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Supero Doctor III Interface Display Screen-I (Health Information)



Supero Doctor III Interface Display Screen-II (Remote Control)

Supero Doctor III - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. Health Info. Performance Remote Control Configuration Administration Systems Management Report Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Note: SD III Software Revision 1.0 can be downloaded from our Website at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend Supero Doctor II.

Notes

Appendix D

System Specifications

Processors
Single or dual Intel® Xeon® 4 LV or ULV processors in 479-pin PGA sockets

Note: Please refer to the support section of our web site for a complete listing of supported processors (http://www.supermicro.com/support/).

Chipset
Intel E7520/6300ESB

Memory Capacity
Eight (8) 240-pin DIMM slots to support a maximum of 16 GB registered ECC DDR2-400 SDRAM

SCSI Controller
Adaptec AIC-7901 controller (RAID 0, 1, JBOD)

SCSI Backplane
SCSI backplane w/ SAF-TE (CSE-SCA-813S)

Main Drive Bays
Four (4) drive bays to house four (4) standard SCSI drives

Peripheral Bays
One (1) slim CD-ROM drive

PCI Expansion Slots
One 64-bit 133/100 MHz PCI-X slot (with riser card, included)

Serverboard
Model: X6DLP-4G2 (ATX Form Factor)
Dimensions: 12 x 9.6 in (305 x 244 mm)

Chassis
Model: SC813MS-300C: (1U Rackmount)
Dimensions: (WxHxD) 17.2 x 1.7 x 19.8 in. (437 x 43 x 503 mm)

Weight
Net (Gross): 35 lbs. (15.9 kg.)

System Cooling
Three (3) 4-cm fans

System Input Requirements
AC Input Voltage: 100-240 VAC
Rated Input Current: 115V to 230V (5A max)
Rated Input Frequency: 50 to 60 Hz

Power Supply
Rated Output Power: 300W (Model# SP302-1S, Part# PWS-0054)
Rated Output Voltages: +3.3V (15A), +5V (25A), +12V1 (15A), +12V2 (15A), 12Vtotal (20A), -12V (1A), +5Vsb (2A)

BTU Rating
1470 BTUs/hr (for rated output power of 300W)

Operating Environment
Operating Temperature: 10º to 35º C (50º to 90º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance
Electromagnetic Emissions:
FCC Class B, EN 55022 Class B, EN 61000-3-2/-3-3, CISPR 22 Class B

Electromagnetic Immunity:
EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:
EN 60950/IEC 60950-Compliant
UL Listed (USA)
CUL Listed (Canada)
TUV Certified (Germany)
CE Marking (Europe)